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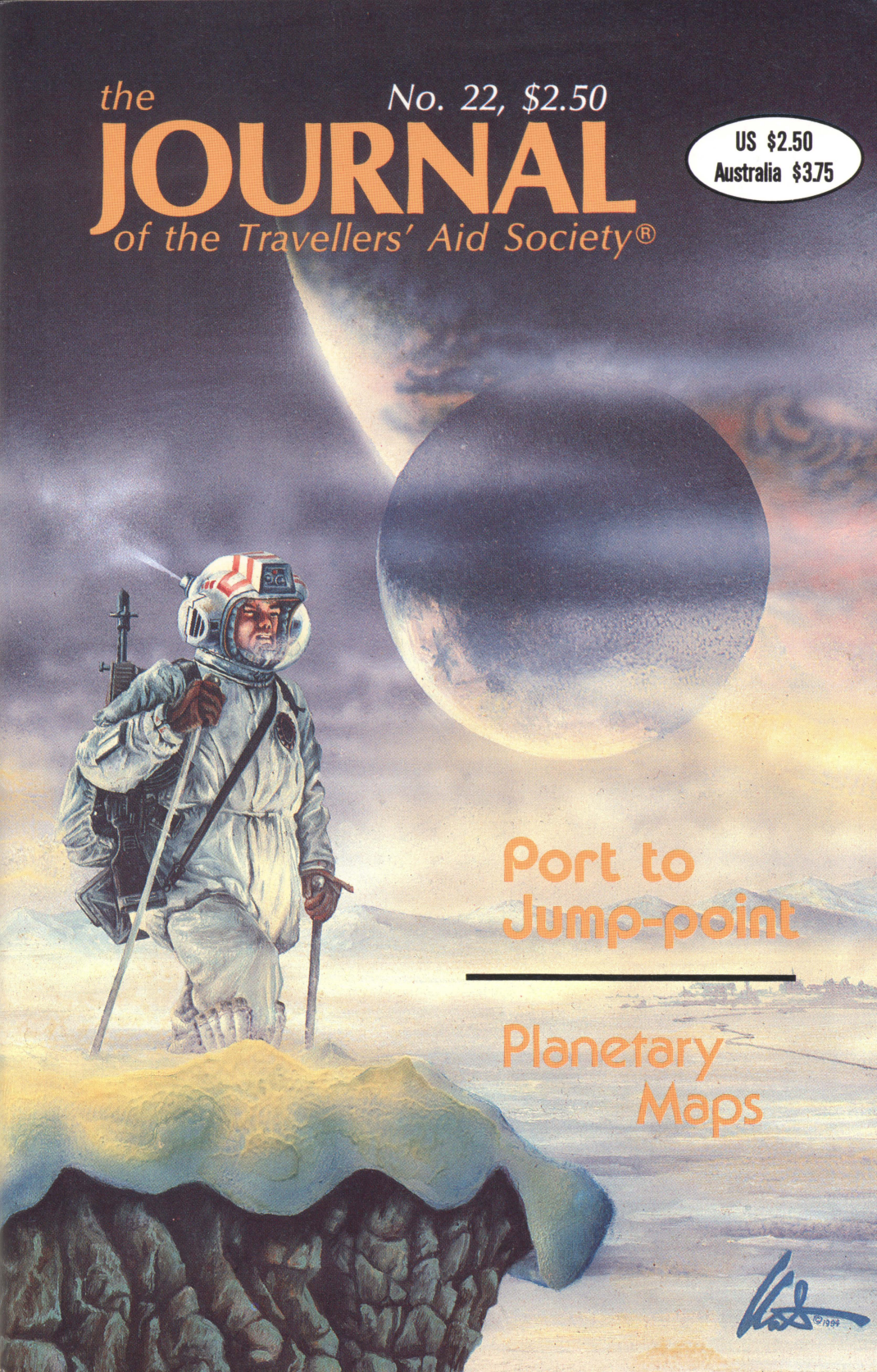

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JOURNAL

of the Travellers' Aid Society®

Amber Zone

Ventures Afar, by John Marshal....13
The Thing in the Depths, by Marcus Rowland....37

Feature Articles

'Til They Glow, by James F. Cumber....6
Computer Implants, by J. Andrew Keith....9
Planetary Maps, by Chris Struble....16
Imperial Academy of Science and Medicine, by Jeff Groteboer....18
From Port to Jump-point, by Leroy Guatney....24
Seastrike, by Marcus Rowland....31

Features

From the Management....2
Just Detected....4
Traveller News Service....5
Contact: the Hlanssai, by Phil Masters....40
Casual Encounter: Enli Iddukagan, by J. Andrew Keith....46

The *Journal of the Travellers' Aid Society* is Game Designers' Workshop's registered trademark for its science fiction gaming magazine devoted to **Traveller.**

Traveller is Game Designers' Workshop's registered trademark for its role-playing game of science fiction adventure set in the far future.

Dates in this issue of the *Journal* are given in accordance to an arbitrary Imperial calendar of 365 days. The date consists of a three-digit day number (the current day of the year) a dash, and a four digit number (showing the current year since the founding of the Imperium).

The date of this issue is **030-1111**, or the 30th day of the 1111th year of the Imperium.

The *Journal of the Travellers' Aid Society* is a science fiction magazine devoted to **Traveller**, GDW's role-playing game set in the far future.

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WINNER — H. G. WELLS AWARD: BEST MAGAZINE COVERING ROLE-PLAYING, 1979, 1980, 1981

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Advertisers should inquire for an advertising rate card.

Submissions: We welcome articles and illustrations for the **Journal.** Please inquire before submitting manuscripts, enclosing a stamped, self-addressed envelope; we will send manuscript guideline and format sheets. Foreign inquiries (except APO/FPO) please include International Reply Coupon.

From the Management

We have received numerous letters and calls in reaction to rumors about our upcoming expansion. Allow us to clear the air a bit with some official news. The *Journal* will be expanding in size to 8.5 × 11" sometime in 1985. The exact page count has yet to be determined, but the magazine will remain quarterly. At the same time, we will expand the magazine to cover other GDW RPGs such as *Twilight: 2000* and *Liege Lord,* in separate sections of the magazine. We may occasionally run an article on some other GDW game, but we will not (I say again, we will not) try to become a general gaming magazine or even a general RPG magazine. Rumors to the contrary are false.

It is not practical for us to publish a separate magazine for each game, as some have suggested. For the benefit of those who play **Traveller** to the exclusion of everything else, all **Traveller** articles will be printed together, in a special section of the magazine, which will continue to be called the *Journal of the Travellers' Aid Society.* The amount of words devoted to **Traveller** will remain the same (in fact, it will increase a little), and the larger page size will enable us to do more things like deckplans and world maps (which are difficult in the smaller size). Exactly when this will come about has not been settled upon, so keep watching this column for news.

Various individuals across the country have begun a project of great value to **Traveller** players and referees, as well as to those of us at GDW who design and develop **Traveller**. This is the **Traveller** Data Base Project. This is a mammoth undertaking, the purpose of which is to assemble a central listing of **Traveller** products and **Traveller** related materials. The proposal is for these data bases to include (but will not be limited to) GDW **Traveller** products, non-GDW licensed products, reviews of these products, an alphabetic list of **Traveller** subsectors (to include data on the subsector and the subsector source), a list of magazine articles concerning **Traveller** (covering those which have appeared elsewhere than in the *Journal),* a cross-reference index of all *Journal* articles, a central compendium of library data entries, a list of ship designs sorted by size code, a source list of developed characters in **Traveller** literature, a list of worlds in **Traveller** literature sorted by world parameters, a central list of tables and charts in **Traveller** and related products, and last (and potentially most useful), a general index of **Traveller** terms, listings, and descriptions.

A large number of people have pooled their time, their energy and their fanaticism for **Traveller** for this project. Some of the material will be made available commercially (for instance, the library data listing is being developed and will be sold by Barac Ltd. Some of the material is not commercially viable, but may be made available at cost as a fan service.

If any of the *Journal's* readers would like to volunteer to assist in the **Traveller** Data Base project, would like to know more about its progress or have information to contribute, the project coordinator would like to hear from you. He is Ed Edwards, and he may be reached

at 1410 E. Boyd, Norman, OK 73071. As in all voluntary projects, money for postage is scarce, so as a favor to Ed, please send him a stamped, self-addressed envelope with any request for information.

I'd like to take the remainder of my space here to deal with a question that sometimes causes a good deal of confusion among *Journal* readers, that is, the distinction between "official" and "unofficial" articles. There is considerable difference between an official addition to the rules (such as "Computers" in issue #1 or the various errata printed from time to time), a suggested variant (such as the Special Supplements), and rule-expansion type articles, such as this issue's "From Port to Jump-point." Official rules additions replace or revise any previous rules which may have dealt with them. Official rules additions are rare, and will be clearly identified as such. Everything else published in the *Journal* is optional.

What this means in practice is that we will occasionally print contradictory articles. Often, two (or more) writers will have equally valid ideas on some facet of **Traveller.** It would be stifling to say that one is right and all the rest are wrong simply because of the order in which they were presented. For example, "Seastrike" contains material dealing with underwater vehicular combat. It takes a particular approach, and gives a few suggested rules for dealing with this facet of the universe. However, referees need not use these rules if they have others they feel are better. Similarly, the fact that we have published an article on this topic will not prevent me from running another on a similar subject later, especially if the subject matter is approached in a significantly different but no less valid manner.

— *Loren K. Wiseman*

Issue 21 feedbacked as follows:

AZ: Homesteaders' Stand.....3.75
Vargr Corsairs.....4.10
Special Supp. 3, *Missiles*.....3.80
Contact: Girug'kagh.....3.40
Within the 2,000 Worlds.....3.70
Just Detected.....2.80
Traveller News Service.....3.70
Bestiary: Quicoral.....3.20
Issue 21 as a whole.....3.65

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CONVENTIONS

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February 15-19 1985, Oakland, California. RPGs (featuring almost every system now in print), Seminars, miniatures painting contest, SCA demonstrations and seminars, and a gaming flea market. For information contact: DunDraCon Inc, 386 Alcatraz Ave, Oakland, CA 94618.

Frontier Wars

March 16-17 1985, Bloomington, Illinois. Sponsored by Dungeon Masters Association, South. Marc Miller has written the **Traveller** tournament. For further information contact: Catherine H. Brennan, 1305 Heritage Rd East, Normal, IL 61761.

Neo Con IV

March 22-24 1985, Akron, Ohio. Boardgames, fantasy RPGs, miniatures, seminars, and a dealers room. For further information contact: Neo Con IV, PO Box 7411, Akron, OH, 44306.

Contest II

March 29-31 1985, Tulsa, Oklahoma. Wargames, miniatures, SF and Fantasy boardgames, RPGS. For further information send SSAE to: Contest II, C/O Tactical Simulation Society, PO Box 4726, Tulsa, OK 74159.

SIMCON

March 22-24, 1985, Rochester, New York. More than 100 tournaments, demonstrations and events. For information contact: Jevon Garrett, PO Box 29142, River Station, Rochester, NY 14627.

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TRAVELLER NEWS SERVICE

DENTUS/REGINA (0601-C979500-A) **Date: 362-1110**

¶ A spokesman for the naval forces under command of Vice-Admiral Elphinstone stated today that a number of Vargr renegades are still at large in the Spinward Marches, despite the best efforts of the navy to hunt down and destroy them. These renegades are the remnants of military units which refused to surrender upon the withdrawal of the Vargr from the war.

¶ A spokesman reports that 90% of the Vargr forces have been dealt with, but admits that a small core remains to threaten shipping in the region.

QUAR/CHRONOR (0808-B532720-B) **Date: 360-1110**

¶ In separate announcements issued today, the Imperium and the Zhodani Consulate announced the cessation of hostilities between all belligerents, to begin on 001-1111. Borders will be returned to the *status quo ante bellum,* and all military forces have begun their withdrawal from opposing territories.

¶ Despite the fact that neither side achieved territorial gains, both the Imperium and the Zhodani Consulate are claiming victory in their announcements. The Fifth Frontier War is over.

LANTH/LANTH (0109-A879533-B) **Date: 004-1111**

¶ In a report made available today by usually reliable sources inside the Imperial government, it was revealed that in the last weeks before the signing of a separate peace beween the Imperium and the Sword Worlds, several deep-penetration raids on the industrial worlds of Gram and Sacnoth severely damaged major naval installations and manufacturing capacity.

¶ The Imperial government is reported to have rejected requests from Sword World negotiators for financial and technical assistance in rebuilding the ruined facilities.

Traveller News Service is another Imperium-wide benefit of membership in the Travellers' Aid Society.

'Til They Glow In The dark:

Nukes for Traveller/Striker Campaigns

Let's face it, the Imperial Rules of War do not always apply. Sometimes a mercenary unit is fighting outside of Imperial Space (where they don't apply) or sometimes the referee is forced by gross player-character misconduct to invoke Imperial intervention, including use of nuclear weapons.

Alternatively, a group of Travellers may find themselves stranded on a low-tech, balkanized world (TL 6-8) that does not recognize Imperial authority (indeed, may not even know the Imperium exists) and is warming up for that crisis in a planet's history known as "global nuclear war".

And what happens to Travellers (or Strikers) who have the great ill-luck to be caught in the middle of something like the Fifth Frontier War, where two warring interstellar governments are exchanging lethal gifts?!

It is a fact that situations can arise where one side or another may be forced to deal with a *massive* exchange of nuclear weapons, because someone has decided to "Nuke 'em 'til they glow in the dark!" In any of the above cases, the nuclear weapons table in Striker is inadequate to the task; in fact, the tech level system is also inadequate to the task, and must be more refined to treat certain technological developments.

What I propose herein is both a new treatment for tech levels, and a new nuclear weapons table.

First, however, I believe tech levels should sometimes be subdivided into more refined units. For example, tech 6 covers the years 1940-1970. Obviously, this is too long a time span. In 1940, rockets ranged only a couple of miles, while in 1970 they had already made two trips to the moon and back. Aircraft were still propeller-driven and subsonic in 1940, but had (in the SR-71) attained multi-Mach speeds and were using ultra-sophisticated turbo-ramjets by 1970.

Nuclear weapons (the subject of this

discussion) didn't even exist in 1940, but had progressed to the point that by 1970 you could place a 12.5 kiloton nuclear weapon into an athlete's bag and put it in a bus locker! The glib classification of tech 6 to include such a large time span unceremoniously throws both the development of nuclear weapons (and nuclear power) and the so-called "thermonuclear revolution" in weapons (and subsequent drastic reductions in size and weight) into the same level of development.

A Scout crew, for example, would take great interest in whether the "low-tech" planet they were investigating could intercept them with a gun-armed ME-109, an F-12A multisonic interceptor carrying an air-to-air guided missile with a 5 Kt. warhead, or an SA-5 "Gammon" ABM weapon with a 5 Megaton warhead (VERY interested), yet all three of these weapons are nominally tech 6! Therefore, I propose that tech 6 through tech 9 be further refined by subdivision into 5-year-long subunits.

For example:

TL 6.0 would be equivalent to 1940-45, and would include "Little Boy" and prop-driven monoplanes.

TL 6.1 would be 1945-50, to include "Fat Man", the first jets, and V-2 class rocket weapons.

TL 6.2 is 1950-55, the first thermonuclear weapons, first *deployed* supersonic jets, and missiles up to 1,000 km range.

TL 6.3 (1955-60) includes the first ICBMs, and aircraft up to Mach 2.

TL 6.4 (1960-65) includes the first manned orbital spacecraft, the first "neutron" weapons, and aircraft of the SR-71/F-12A class (speeds around Mach 5).

TL 6.5 (1965-70) would include manned lunar rockets and primitive "reusable" spacecraft, like the X-20 "Dynasoar" would have been had development of it not been cancelled.

NUCLEAR MISCONCEPTION

Since the subject is nuclear weapons, permit me a short diversion to correct a common misconception about nuclear weapons use in space. Most people harbor the misconception that the only nuclear effects one must worry about in space are those having to do with the heat from the fireball, the electromagnetic pulse that kills computers, and the initial burst of neutrons, gamma rays, and hard X-rays that are called "Initial Nuclear Radiation". One of the interesting discoveries of the high-altitude tests of the very early 1960s was that the blast effects observed when a nuclear weapon was set off in the atmosphere were produced by the release of "soft" X-rays. In space, these X-rays radiate from the point of burst and continue outward until they encounter a solid object. On striking something solid, they transfer their energy to it in the form of a "shock wave" that propagates through the object at the same intensity as if the object had been struck by the blast wave of an endo-atmospheric burst.

So you do have a "blast wave" (of sorts) in space, even without an atmosphere through which to propagate it. This mechanism has become known in the ABM business as an "X-ray Kill" when applied to exo-atmospheric intercepts.

This being the case, there should be account of this taken in ship-to-ship exchanges in *High Guard.* Since the following tables are set up for *Striker*, and since *Striker* contains conversions for High Guard ship armor, I would suggest that nuclear missile exchanges in space take account of the X-ray Kill effect by attacking the ship armor and structure as per *Striker* rules. To reiterate that rule:

"If a vessel is hit, roll damage on the *High Guard* damage table, using the weapon's penetration as a negative DM

and the ship's armor rating plus 6 as a positive DM."

(*Striker* Book 2, Page 41: Rule 75B).

The following table of armor equivalences is given for your convenience:

EQUIVALENT ARMOR RATINGS

High Guard	*Striker*	High Guard	*Striker*
0	40	H	67
1	44	J	68
2	47	K	69
3	50	L	70
4	52	M	71
5	54	N	72
6	56	P	73
7	57	Q	74
8	58	R	75
9	59	S	76
A	60	T	77
B	61	U	78
C	62	V	79
D	63	W	80
E	64	X	81
F	65	Y	82
G	66	Z	83

NUCLEAR WEAPON SIZES

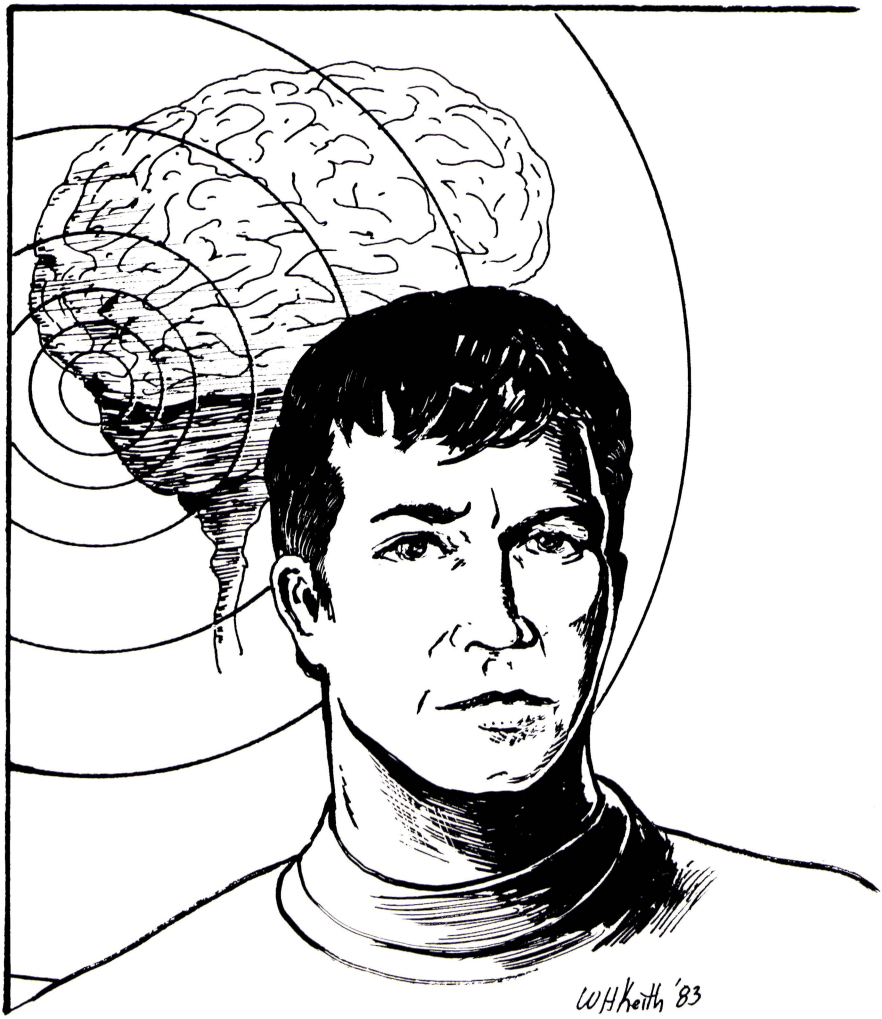
The first nuclear weapon, the "Little Boy" bomb dropped on Hiroshima (and apparently the only example of a nuclear weapon using a "gun-type" initiator rather than an "implosion" charge) had a yield of 12.5 Kilotons (Kt.), was 3.048 meters long by 0.7112 meters in diameter and weighed 4.037 metric tons. The second nuclear weapon, Nagasaki's "Fat Man", was more efficient in yielding 22 Kt. in a package 3.251 meters long by 1.524 meters in diameter and weighing 4.899 metric tons.

It was the "Thermonuclear Revolution" that allowed both Megaton yield weapons, and the reduction of nuclear weapon size to where it was practical to use small aircraft and missiles for delivery vehicles. This revolution took place in the 1950s, and resulted from the harnessing of thermonuclear fusion for weapons use. Suddenly, weapon weights tumbled, and (in less than 20 years) it was possible to construct nuclear weapons of Hiroshima size that were truly man-portable, as well as artillery shells, such as the 272 kg. Mark 19 atomic (fission) artillery shell (W-19 nuclear weapon, estimated yield of over 2 Kt.) for the Army's 11"(30 cm.) Atomic Cannon (deployed 1956-1963) and the 862 kg. Mark 23 atomic (fission) artillery shell (W-23 nuclear weapon, estimated yield of over 25 Kt.) for the 16" (40.64 cm.) guns (deployed 1956-1961) of the Navy's Iowa class battleships, like the New Jersey.

Table 1 expands the choice of weapons available to include multi-megaton strategic nuclear weapons (the first product of the thermonuclear revolution'), and plots their effects, using *Striker* terms and scaling laws. The 12.5 and 22 Kt. weapons ("Little Boy" and "Fat Man", respectively) have been given as a point of historical perspective.

Table 2 has been divided into two parts, and contains the weapon weights by tech level. Here is where the *Striker* system breaks down slightly, because it is not the diameter of the weapon (as stated in *Striker*) that is the main determinant of how large a warhead it is, but the weight. Diameter does have an effect, but in the final analysis it is the weight that is the prime factor. To use the table, cross-index the weight to the weight of HE rounds to find the minimum bore size of a CPR or mass driver gun to fire the weapon (or diameter of air-delivered freefall weapon or missile warhead). Prices are computed as in *Striker* Book 3, Page 40. The numbers immediately above the tech level notations are the Megaton Equivalent to the

Continued on page 44



Computer Implants

The computer implant is a man/machine interface which allows the closest combination of human intelligence and computer processing yet developed. Still not widespread due to high costs and certain risks involved, these implants are an item many desire, but few receive.

A computer implant is a small device surgically linked to an individual's nervous system. Once implanted, it serves as a link between the individual and a properly equipped computer system. The device responds to the user's neurological activity; in effect, when the individual thinks, the implant picks up the thought and allows interface with a computer. The computer relays information back to the implant, which converts the signal into impulses transmitted into the nervous system, which are interpreted by the brain as audio and visual

input.

Thus, the individual "hears" or "sees" the computer's reply (the latter by closing his eyes and requesting a visual display). The implant thus removes a major block to rapid computer operation, speed of interface. Always before, a person could think incredibly fast, and a computer could operate at even more phenomenal speeds, but the interface between the two was limited by the input of commands through a keyboard or voder/vocorder circuits.

The implant's tiny internal communications link limits its range to about a kilometer (less if there is any factor present which might reduce the range of a radio signal). Interference or jamming can block the link entirely. It is possible, however, to extend the range of a computer through the use of a remote terminal, a briefcase-sized unit which has the characteristics of a long-range communicator. Within a kilometer of a remote terminal, the individual can use the implant to communicate with a computer much further away. On most worlds of tech level 10+, satellite networks (which the terminal can access) will link the entire planet into one large computer net, enabling an implanted individual access to the computer from any part of the world.

Use of a computer implant does not in any way alter the nature of the computer. A character would still need computer skill to program, repair, or execute complicated functions with any computer. Security codes and like features would still prevent an unauthorized person from reaching private files or making programming changes. The computer, in other words, does not change; the implant only makes man/machine communication faster.

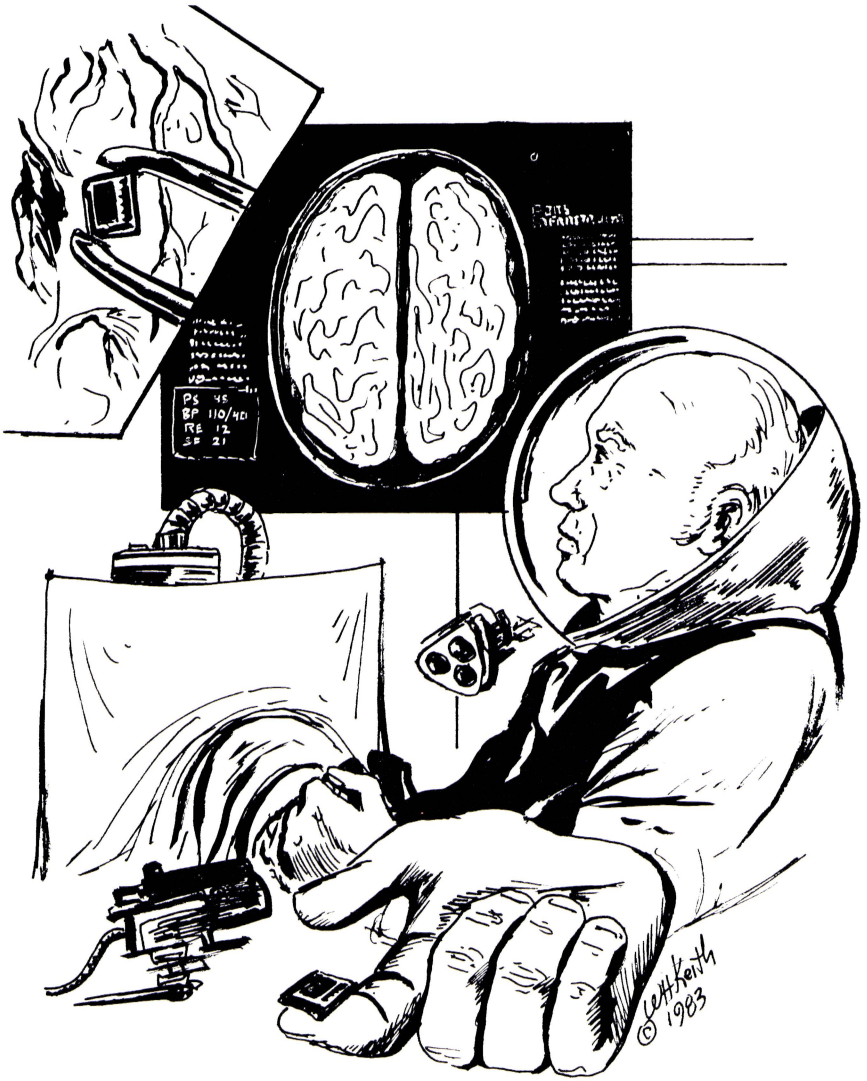
The implant does confer a number of advantages other than speed, however. These advantages are *only* conferred when the individual is within range of an operating system. They are tied to the computer, and are lost if, for any reason, the character cannot establish the necessary communications link.

First, within the link's range, the character who possesses an implant is considered to have intelligence and education scores of 16 each. These are higher than the maximum normal levels for humans, reflecting the computer's processing abilities and the total recall afforded by the computer link. If the computer is running a library program, any information in that program can be instantly requested.

The second major feature of an implant is the enhancement of skills. These come in two groups. When the individual wishes to interact with a computer running a program which permits application of a skill to a specific task (Gunner Interact, Maneuver/Evade, Navigate, etc.), the individual's skill level is considered to be 2 higher than it actually is. This reflects the faster reaction times and superior recall abilities conferred by this man/machine combination. Thus, an implanted individual with gunnery-1, using a Gunner Interact program would get a DM+3 in firing. The modification is applied only if the character already has skill in the area in question. If the individual has a skill level of 0, it becomes a 1. If no skill is possessed, treat as skill-0.

When linked with the computer, characters can also enhance most other skills to a lesser extent. This enhancement comes from the ability to "look up" information on the spot. In most cases, a +1 should be allowed to a character's skill level. The referee should have the final say on what skills should or should not be increased. For instance, brawling, blade combat, and gun combat are not likely candidates for such an increase, since things are likely to be

happening too fast to permit the computer information to be put to good use. (These are skills where instinct is better than data.) On the other hand, purely technical skills, —medical, engineering, mechanical, gravitics, etc.—are certainly good candidates for an increase. And a good argument could be made for less clear-cut skills, too. Steward, for instance, could be enhanced by instant access fo files containing a passenger's preferences in food and drink, Broker by up-to-date price reports, Gambling by fast calculation of odds and total recall of the fall of cards. A few skills (Leader, Streetwise and so on) are unlikely candidates for such enhancement, but may be allowable if a good enough case can be made for a particular set of circumstances. Circumstances, after all,



are the key.

A final application of the implant is in the field of communications. Two persons with implants linked to the same computer can enjoy the closest thing to telepathy that can be achieved by mechanical means. Individuals think, and those thoughts are picked up by the implant, transmitted to the computer, then to the intended recipient, where they are reinterpreted as a "voice" inside the receiver's head. Such communications, of course, are subject to normal physical laws such as time delays for extreme distances, and so on.

For all these advantages, use of the computer implant still presents some large disadvantages. First, there are potential psychological problems. When an implant is made, the character should roll basic (not enhanced) intelligence or less to determine whether or not the brain can handle the sudden rush of data and images. If the roll fails, the implant must be shut off within minutes or there is a very real danger of insanity due to sensory overload.

Another problem exists for some implantees who find themselves cut off from a computer link. These people become psychologically dependent upon the link. The first time an implanted character is cut off from a link, they must roll their base intelligence or less to avoid such problems. If the roll is failed, roll again: a 10+ indicates a complete breakdown. As long as the link is broken, the character will become increasingly nervous, feeling isolated, unable to think logically, unable to recall any but the simplest data. Eventually (after 1-6 hours) the person enters a state of complete catatonia, and can only be brought out of it by psychological treatment. Any other result of the die roll means that the person functions at half Intelligence, half Education, and half of all skill levels until treated or until the link is restored.

Prolonged reliance on a computer implant can cause a more subtle dependence on the link. The character can become dependent upon the computer and lose a great deal of initiative and ability. This is treated much like aging, with intelligence and education subject to potential periodic reduction. For every two years in which the character has spent at least 75% of his waking hours using a computer link, a saving throw of 8+ must be made to avoid −1 intelligence, and a 7+ to avoid a −1 education. These affect the character's basic scores, not the enhanced ones. If the basic score reaches 0, however, removal of the character from the link will result in a nervous breakdown automatically.

Excessive reliance on the skill enhancement features of the computer implant can sometimes lead to difficulty. Because use of the implant requires the individual to pause and think a problem through, instinct and quick reaction can sometimes be dulled. When using a skill under enhancement from the implant, a character may be required to make periodic saving throws against a crisis situation (a sudden problem during surgery, a short in an electrical circuit under repair). The throw should be made against the character's basic intelligence level, with a failure of the throw meaning that a second throw, to actually deal with the crisis (this throw must be set in advance by the referee, in accordance with the usual procedures), must be made without benefit of *any* skill modifiers. Thus, reliance on an implant can backfire, leading to a severe problem.

In addition to long term problems, there are certain more immediate limitations to computer implants. First is availability—they can only be supplied on

Continued on page 38

Amber Zone: Ventures Afar

PLAYERS' INFORMATION

Denotam Traders, LIC, is a small but important mercantile firm which conducts shipping operations through a large portion of the Vilis subsector. A major part of the company's importance stems from the intersystem mail contract granted by the subsector and Imperial authorities to the corporation. Denotam ships—a fleet of ten subsidized liners based at Denotam itself (Vilis 0603 B-739573-A) carry messages, mail, small parcels, and passengers to the worlds of Arkadia, Stellatio, Mirriam, Calit, and Ficant, all relatively unimportant systems that lie off the main xboat and trade routes in the region. The Denotam Traders fleet also serves other portions of the subsector, with ordinary commercial service, but all of the Denotam ships service the Vilis Core Circuit, as the route is known, at least twice a year.

Curiously, a series of recent incidents have caused a problem of drastic and mounting proportions for Denotam Traders in the past year. During the Fifth Frontier War, an occasional loss to deep-penetrating commerce raiders was to be expected. Recently, however, with the war entering a period of armistice, war losses could be expected to decrease, but this has not been the case. In the last year, five ships making the circuit have been lost, compared to one lost and one damaged but recovered in the year before.

The adventurers are approached by Shaimar Sulankin, one of the corporate officers of Denotam Trading. Sulankin explains the background detailed above, and goes on to describe the effects of the losses. Denotam has lost the ships themselves, of course (although these can be replaced at considerable cost). Of more importance, though, is the fact that the valuable mail contract is in jeopardy;

subsector officials are loath to allow Denotam to continue handling the mail contract with their now-alarming loss rate, and have threatened cancellation. This would ruin the company, as the government contract is worth considerably more than the typical mail run an independent trader might arrange.

Sulankin wants to discover what's at the bottom of recent losses—some new Zhodani weapon? A spy in the Denotam routing office? New privateer tactics? The company is completely baffled, and is willing to pay Cr25,000 per person for a team to investigate and halt the losses. Full assistance and cooperation will be extended where possible, though the adventurers' involvement is to be kept as quiet as possible for the sake of good public relations.

REFEREE'S INFORMATION

This adventure falls into two basic parts: the investigation and the verification. Investigation into the background of Denotam's shipping losses should involve both research and observation. For the former, it is simply a matter of absorbing background and asking good questions. For the latter, the characters should follow a few Denotam crews as they make the rounds of the Startown bars (making good use of any streetwise or bribery skills the party may have), attempting to infiltrate themselves into the comparatively tight circle of Denotam's ship's crews. The atmosphere of Startown (rough dives, brawls, etc.) should be an important element of this portion of the adventure. As they investigate, the adventurers will turn up certain key facts. First off, there is no particular pattern to the losses as far as location or other tie-ins. Secondly, Denotam ships seem to be the only ones suffering. Of course, there are few other organized companies engaged in trade on the circuit (except for independents, there isn't that much trade to attract many competitors); still, the loss rate remains baffling.

Interestingly, morale is rather high among Denotam crews. Each ship is independently owned, being hired by a long-term charter with the company. The company pays a portion of the monthly payments and (together with insurance underwriters) guarantees replacement if the vessel is lost due to piracy or war. The commerce raiders, mostly Sword Worlders, are being remarkably civil about the whole thing. Captured civilians are being reprocessed and returned to Imperial space within three to six months of capture. A relatively short imprisonment is the worst the Denotam crews seem to be faced with. The crews are rather clannish, however, and will not readily talk about their experiences to outsiders.

One last thing that should be noted is the fact that most of the trader crews do a fairly good business in personal trade and speculation—carrying small cargoes ("ventures") aboard each ship as a part of their luggage allotment. Various lots of spices, perfumes, and other luxury items fetch a good price at various ports of call away from Denotam, and some crews seem eager to make their regular runs (sometimes swapping berths to pick up extra time on the circuit) in order to pursue the venture trade. A 10 kg parcel, worth maybe Cr50 on Denotam, can bring up to Cr200 at some of the ships' ports of call. These easy profits have proven to be an excellent way to line the pockets of Denotam crews.

Eventually, the adventurers will come up against the simple fact that they cannot gather more data by the original means. In fact, they should at some point conclude (Sulankin will suggest, if they don't think of it themselves) that the only way to learn what's happening is to take passage on a liner and see

what happens to it. Sulankin can arrange passages for the group or can pull strings to get a few people appointed as crewmembers. (The latter, as outsiders and thus potential company spies, won't be able to discover much by asking questions.) In this way, a typical voyage can be undertaken and the facts of an attack can be established first-hand.

The voyage should proceed routinely. If at any time the ship encounters a pirate (and the referee can stack the deck, if necessary), the players will have an opportunity to see something of what is happening. Left to themselves, the crew of the liner will be unbelievably sloppy in handling her—running at reduced acceleration in dangerous regions, refusing to take evasive action until far too long a time after suspicious blips are picked up on sensors, responding slowly to threats. If attacked, they will surrender almost immediately, even if guns and drives are still fully operable. The crew will exaggerate the problems to be expected, and claim they have no alternative but to surrender.

Naturally, the adventurers might put a stop to all this by a well-timed "mutiny"—but the crew will still interfere (even when they seem to be trying to help, they do so clumsily). Also, if the group prevents the ship from being captured, they've not really proven anything for sure about the losses. But the observed behavior, together with the background they've picked up, can serve to point the way.

One last fact can be interjected at some point which solves the entire mystery. It might be a vague clue (forcing the group to reason the story out for themselves), or a statement by some member of the ship's crew who disagrees with the behavior of his colleagues. The fact is this—most of the crew engaging in ventures trading have also found the value in participating in a rather lucrative insurance scam. This can come out through a revelation by someone who knows about it, or from the discovery of insurance forms or similar clues in the quarters of several of the crew (including senior officials).

Crewmembers have always insured their "ventures" and, in fact, have always over-insured them. For a comparatively low premium, a venture worth Cr50 can be insured for Cr300 or more. What's more, it is insured for a round trip, the crewmember claiming that he might not be able to sell it on the voyage.

What actually happens, however, is that the crewmen sell their ventures for a hefty profit, reinvest a small portion of their money in ventures for the return trip, and send the profits back via the next convoy, (often several months apart, but the transaction can be arranged easily enough).

If, on the return voyage, the ship should fall in with a raider and be captured, the insurance is paid by the underwriters—a free and clear profit of several hundred credits on that original Cr50 investment.

Even owners and masters go along with this, venturing even larger amounts, secure in the knowledge that the company will replace lost ships. The fast turn-around time for prisoner exchange means that a capture is no more than a highly profitable inconvenience for all concerned.

This situation can serve as a springboard into a variety of adventure situations. If the party can discover the information and get back to Denotam they will, of course, receive their pay (and measures will be taken to tighten regulations against insurance irregularities). Getting there, however, can truly be half the fun. First, there are the renegade Sword Worlders to dodge. Second, there is the problem of coping with

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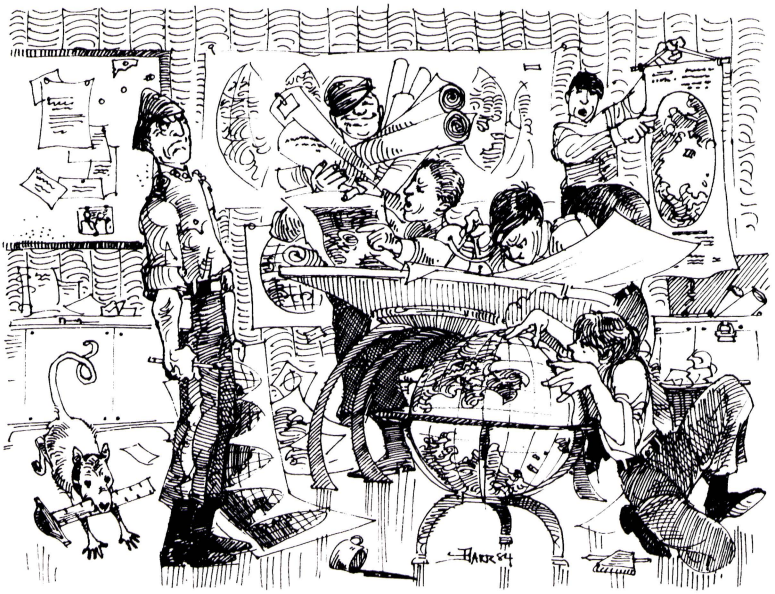


"Gimme Strength..."

Planetary Maps

In the course of **Traveller** adventuring, referees may find it useful to have maps available for whatever planet the players are on. Since publication of maps of each and every planet in the Imperium would be prohibitively expensive, the best alternative would be to have a system for generating a planetary map based on known statistics of the world.

This system uses the planetary grid system introduced in *Twilight's Peak* and seen in *Tarsus* and other adventures—that system divides planets into 20 triangular sectors of 24.5 hexagons each, for a total of 490 hexes. A number of continents and large islands will cover the average world, all of which may be ripe for adventure. The size, position, and layouts of these continents is determined as follows:

Plates: Each world will have a number of interlocking tectonic plates. Size and shape of these plates will determine the layout of the continents and oceans. Roll 1D x 20 to determine the number of hexes in each plate and draw the plate's boundary on the planetary map—shape of the continental plates is determined by the referee or by comparison to surrounding plates—all plates must touch and they must cover the entire planet.

Continents: Each world will have one or more islands, continents, or supercontinents—the total number and size of these land masses are dependent primarily on the world's hydrographic percentage—the total land area (in hexes) limits the overall size and area of these continents.

Roll for continent type and then for the total number of surface hexes on the continent. Each continent must be placed on a specific continental plate, determined randomly or by referee's choice. The continent must fit entirely within the plate, though a supercontinent may cover several adjacent plates. Only one continent or supercontinent

may be on a given plate. The exact size and shape of each continent is up to the referee, within the above constraints.

Repeat this process until all land hexes have been used up and all continents placed on the map. Where rolls on the continent type and size tables generate a continent that is larger than the remaining plates or land hexes, ignore that roll and add a DM of 1 to all remaining rolls for continent type—do this each time this occurs—DMs are accumulative.

Physical Features: Once the basic outline of the land masses have been done, the referee can add refinements to the coastline, such as bays, inlets, peninsulas, estuaries, and inland lakes or seas, so long as these do not change the number of land/water hexes drastically. Note that the coastline should pass through the center of a hex, not along its edge.

The referee should also add in terrain features such as desert, mountain, wetland, and polar caps, in whatever quantity fits their ideas of the planet's environment. Obviously, icecaps will be limited to polar regions, deserts to rain shadow regions, or inland worlds with low hydrographic percentages, wetlands to tropical coastal areas, etc. Mountain ranges will tend to parallel the edges of continental plates, more or less. All other terrain is assumed to be plain terrain.

Populated Areas: Most worlds will have several populated areas where the majority of the planet's inhabitants live. These might range from isolated mining outposts with a few inhabitants to massive cities or metroplexes accommodating millions.

Roll on the demographics table to find the number of populated hexes on the planet's surface. These will not necessarily be the only populated hexes, but these are the only major population centers. Populated hexes are generally on plain terrain and tend to be in temperate regions (roll 1D to determine distance in hexes from the equatorial line). Other hexes may be populated by some small villages or settlements, but these will not be listed on the map (roll planet's population or less on 2D for some minor settlement to be on a given hex, except for icecap hexes—DM +2 if mountains, +1 if wetlands or desert hex (roll only when hex is entered).

On heavily populated, balkanized worlds, each population hex may represent the population center of a major nation or group of nations—referees may wish to draw in boundaries and deter-

continued on page 30

Total Land Area

Hyd	*Hexes: #:*
0	471-490
1	421-470
2	371-420
3	321-370
4	271-320
5	221-270
6	171-220
7	121-170
8	71-120
9	21-70
A	0-20

Type of Continent

1 –	Supercontinent
2	Supercontinent
3	Continent
4	Continent
5	Continent
6	Island

DM: (hyd #) – 5

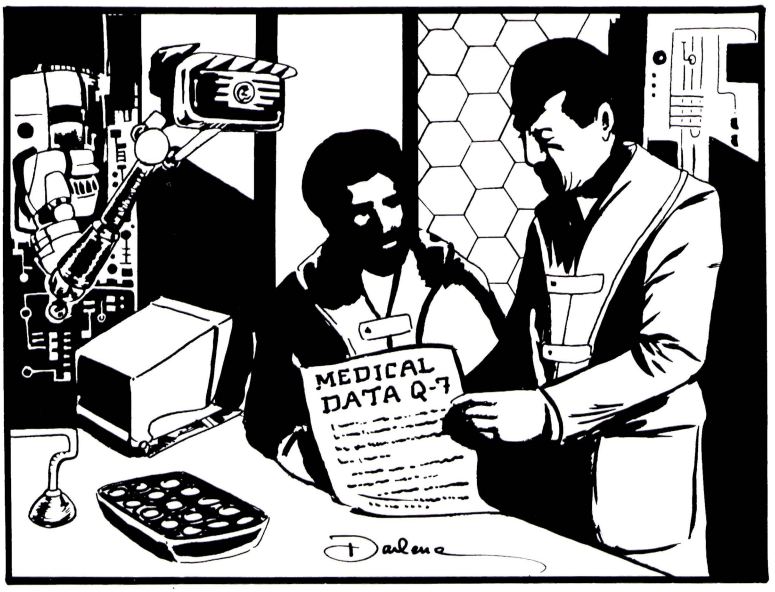
Hexes Per Continent

Supercont.	1D × 30
Continent	1D × 10
Island	1D

Demographics Table

Roll (1D)	*# Hexes*
1 –	2
2	3
3	5
4	10
5	15
6	20
7	25
8	30
9	35
10	40
11 +	50

DMs: + pop
– size



The Imperial Academy of Science and Medicine

The Imperial Academy of Science and Medicine was founded in 341 by Imperial decree. By 950 there were branch campuses on thirty-one worlds throughout the Imperium. The academy is known and respected even beyond the Imperial borders, and researchers affiliated with the academy are received with all the pomp usually reserved for visiting dignitaries.

In 845 the academy (and numerous other educational, governmental and commercial organizations) founded the Imperial Science Union, dedicated to research both inside and outside Imperial space. Since its foundation, the union has obtained a fleet of over 100 starships and numerous laboratories on over three score worlds.

ADMISSION

Admission into the academy can be achieved in two ways: through application and acceptance, and through transfer from another organization.

Transfer is a temporary transfer from the original service to the academy. Open only to commissioned officers and the equivalent, it may only be attempted at the end of a four-year term, and lasts one term. Transferred officers are automatically assigned to the college most closely related to their Military Occupational Specialty (MOS) since they have already completed their undergraduate educations. After completion of the four-year term, the character returns to his parent service and receives an automatic promotion of one rank. If the character fails any year at the academy, he returns immediately to his parent command and is demoted one rank automatically.

Applications are accepted only from characters with a Social Status of 9+ and an Education of 10+. There are no age restrictions, and many students come to the academy after leaving

the merchants or the military.

UNDERGRADUATE EDUCATION

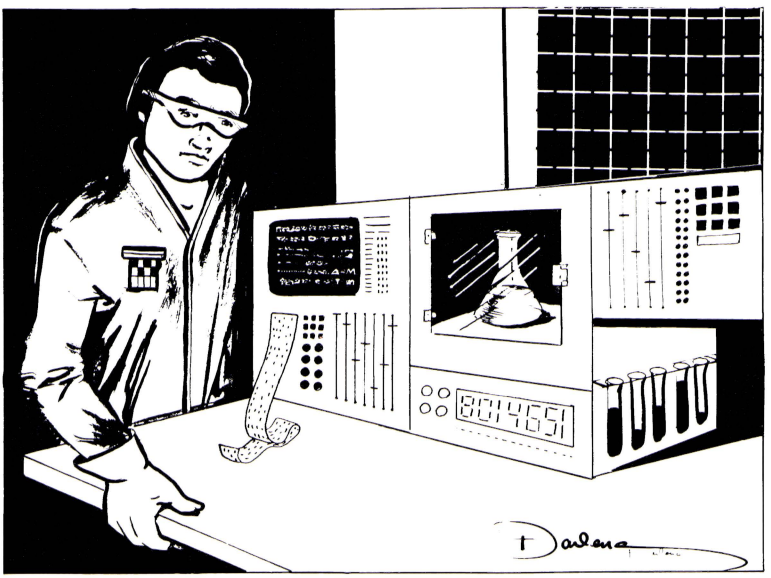
Academic success is rolled yearly, first on the yearly success table and then on the yearly skill table. Each year there is a chance the student will obtain proficiency in one of the undergraduate skills. Once all undergraduate skills have been attempted (after the fourth year) the student rolls on the occupational specialty table to determine which post-graduate college he will attend. The process then continues with the yearly success and skills rolls, but the student now rolls on the appropriate college table or the personal skills table. If at any time the character rolls a 2 on the yearly success table, he drops out that year, and must wait until the beginning of the next term before re-applying.

INTER-COLLEGE TRANSFER

Any student may apply to study at another college at the end of a term, by so stating and rolling on the occupational specialty table. Should he roll the college he wishes to leave, this should be interpreted as the target college not accepting his application, and indicates that he must either quit his studies or continue in his present college for another four-year term.

DOCTORATE DEGREES

In order to attain a doctorate in an area, a character must possess a skill level of 4+ in the major skill for that area, plus a skill of at least 4+ in a related skill. A doctor of physics, therefore, must have Physics-4 and any other natural science (or lab technician) skill of 4+. For combined degrees, such as astrophysics, the character must have a skill of 4+ in all applicable skills. For example, a doctor of astrophysics would need to have at least Physics-4 and Astronomy-4.



TRANSFER: 8+

DMs:

+2 If Imperial Navy
−1 If Marines or Merchants
−2 If any other
+1 If the sum of Intelligence and Social Standing is 20+
+1 per point of Medical skill (only if applying to College of Medicine)

ENROLLMENT: 10+

DMs:

+1 If Educ=12+
+2 If Intel=8+

YEARLY SUCCESS

12+ one skill at level 2 (Summa cum Laude)
10-11 two skills (Magna cum Laude)
7-9 one skill
3-6 no skill this year
2− failure, drop out

DMs:

+1 if Intel=11+
+2 if Research=1+

UNDERGRADUATE EDUCATION

Year	*Skill Gained*
1	Administration
2	Biology
3	Computer
4	Physics

OCCUPATIONAL SPECIALTY TABLE

1 College of Social Sciences
2 College of Social Sciences
3 College of Physical Sciences
4 College of Physical Sciences
5 College of Engineering
6 College of Medicine
7 Choice of College

COLLEGE OF MEDICINE

2 Radiology
3 Anesthesiology
4 Pharmacology
5 Practitioner
6 Laboratory Technician
7 Laboratory Technician
8 Practitioner
9 Pathology
10 Surgeon
11 Surgeon
12 Special Surgery

DMs

+ or − in Intel=10+
+ or − in Dex=10+
see special surgeon table

COLLEGE OF PHYSICAL SCIENCES

2 Paleontology
3 Physical Anthropology
4 Genetics
5 Biology
6 Chemistry
7 Laboratory Technician
8 Laboratory Technician
9 Physics
10 Geology
11 Geogeny
12 Astronomy

DMs: −2 if Intel=10+ −1 if Educ=12+

SPECIAL SURGEON TABLE

1 Dental Surgery
2 Bone Surgery
3 Cosmetic Surgery
4 Optometric Surgery
5 Transplant/Reattachment Surgery
6 Neurological Surgery
7 Alien Surgery

DMs:

COLLEGE OF SOCIAL SCIENCES

1 Political Science
2 History
3 Cultural Anthropology
4 Sociology
5 Psychology
6 Linguistics
7 Sophontology

DMs

+1 if Intel = 12+

PERSONAL DEVELOPMENT TABLE

1 +1 Dexterity
2 +1 Strength
3 +1 Education
4 Administration
5 Vehicle
6 Computer
7 Research

ENGINEERING TABLE

1 Agricultural Engineering
2 Mechanical Engineering
3 Electrical Engineering
4 Computer Engineering
5 Transportation Engineering
6 Macro-Engineering
7 Starship Design

GRADUATION (Mustering-Out) TABLES

Cash

1 Cr10,000
2 Cr10,000
3 Cr20,000
4 Cr30,000
5 Cr40,000
6 Cr50,000
7 Cr100,000

Other Benefits

1 +1 Endurance
2 +2 Education
3 +2 Social Status
4 +1 Intelligence
5 Travellers' Aid
6 Imperial Science Union
7 Lab Ship

EXPLANATION OF TABLES

Lab ship may be taken as a mustering-out benefit only once. Any second lab ship received should be taken as permanently installed technical equipment. Such equipment would be directly related to the character's specialty.

SKILL DESCRIPTIONS

College of Physical Sciences

Astronomy: The study of the cosmos. An astronomer is able to recognize the star patterns of most locations in known space by their colors and absolute magnitudes, and would be invaluable after a misjump or if the computer went on the blink. There is a limit to memory, however, and an astronomer can only keep such details for a single sector in his mind.

Biology: The study of living organisms, including such sub-fields as microbiology. Biological studies are conducted on organisms at all levels, including human and alien life.

Chemistry: The study of the elements, and how they inter-react. A chemist knows how to mix chemicals correctly to produce certain results, and (given proper facilities) can readily identify most substances.

Genetics: The study of the biochemical structure of life. A minimum of Biology-1 and Chemistry-1 must be possessed before any Genetics skill may be acquired.

Geogeny: The study of physical planetary formations, such as seismic belts, mountain ranges, and so on. The geogenist would be helpful in locating certain kinds of minerals and ores based on their formation patterns (feldspar or coal, for instance).

Geology: The study of rocks and minerals. The geologist, unlike the geogenist, would be able to identify the exact type of mineral and estimate its value. He would be invaluable on pros-

specting missions.

Laboratory Technician: Same as College of Medicine Lab Tech.

Paleontology: The study of past forms of life, including the examination of fossils. The paleontologist must know biology and chemistry.

Physical Anthropology: The systemic examination and classification of primitive humans and proto-humans. This includes their physical make-up as well as their artifacts and the techniques for making them.

Physics: The study of force and its effects on the behavior of objects. This includes everything from particle physics to cosmology. The skill would help a pilot calculate thrust for a tricky landing, or give an engineer a better understanding of just what happened when he dropped the wrench into the jump drive.

College of Social Sciences

Cultural Anthropology: The study of human cultural development. By examining various cultures, the cultural anthropologist is able to understand the technical and social advancement of the culture in question.

History: The study of events in the past. This will have the heaviest focus on the interstellar community in which the student lives (the Imperium in most cases). All citizens begin with a history-0 skill, a rudimentary knowledge of the history of their world and its importance in the interstellar society.

Linguistics: The study of languages: their formation, structure, and development. Having this skill, the character would be able to learn human and alien languages more easily, and would be able to discern the origin of a person by his accent.

Political Science: The study of political systems, warfare, and governments. The political scientist is familiar with laws and their effects on the citizenry, and may even know something about black marketeering.

Psychology: The study of behavior patterns in sentient beings. The psychologist is able to elicit specific reactions and behavior patterns based on certain stimuli, use hypnosis to diagnose and treat behavioral abnormalities, and so on.

Sociology: The study of social groupings and cultural patterns of sentient beings. Through observation and experimentation, the sociologist attempts to determine the factors contributing to social phenomena. The sociologist is (to a certain extent) able to manipulate crowds.

Sophontology: The study of alien races. Sophontology is divided into specialties for each individual race, and is further split into the same divisions as anthropology.

College of Engineering

Agricultural Engineering: The study and implementation of agricultural plans to affect crop yield and quality. The agricultural engineer can make sound decisions on planting and harvest times, the suitability of a particular crop for a particular environment, proper use of chemicals, etc.

Computer Engineering: The structure and design of computers. At a skill level of 4+ (and Electronics-3) the computer engineer can design and build his own computer.

Electrical Engineering: The structure, design, and operation of electronic devices, except computer systems. This skill is considered to be equivalent to Electronics-2 for the purposes of error detection, but not repair.

Macro-Engineering: The planning of cities and starports, world terra-forming, and other large scale construction.

Mechanical Engineering: The structure, design, and operation of

mechanical devices. This skill is considered to be equivalent to Mechanical-2 for the purposes of error detection, but not repair.

Starship System Design: This skill is required to commercially design starships, and includes knowledge of the ways that starship systems are integrated to provide the best operation.

Transportation Engineering: The design and operation of public transportation devices, such as monorails. This includes cost-effective construction and operation techniques.

College of Medicine

Anesthesiology: This skill represents expertise with various substances used in anesthesia and with the machinery and techniques used to administer them.

Laboratory technician: This is the basic skill for all doctors and scientists, and includes knowledge of and experience with all manner of lab equipment, from forceps to electron microscopes.

Pathology: Skill in performing autopsies to determine cause, time and manner of death with reasonable accuracy.

Pharmacy: The expertise in mixing drugs for specific purposes, along with knowledge of proper dosage levels. The pharmacist is familiar with the physiological effects of drugs.

Practitioner: This represents the "family doctor" skill. A practitioner can diagnose illnesses, recommend cures, and perform rudimentary surgery as well as routine check-ups.

Radiology: Expertise in using machinery to examine and diagnose bodily disorders. The equipment used includes ultrasonic and magnetic scanners as well as x-ray machines.

Specialized Surgical Skills

Alien Physiology: Knowledge of the bodily systems of a particular alien race, and experience in that race's medical treatments and surgical procedures. When this skill is obtained, roll again on the college of medicine table to determine the specific medical skill in the alien's field.

Osteological Surgery: This skill represents expertise in the surgical alteration and repair of bones.

Dental Surgery: This skill represents expertise in the repair, restructuring, and replacement of the teeth and the surrounding bones of the jaw and face.

Cosmetic Surgery: This skill represents expertise in alteration of the appearance of a patient, to improve looks or repair damage from injury or birth defect.

Optometric Surgery: This skill represents expertise in performing surgery on the eyes in order to restore or improve vision.

Neurological Surgery: This skill represents expertise in performing surgery on the nervous system and brain.

Transplant/Reattachment Surgery: This skill represents expertise in performing organ and tissue transplants and reattachment of limbs (including both living limbs and prosthetics).

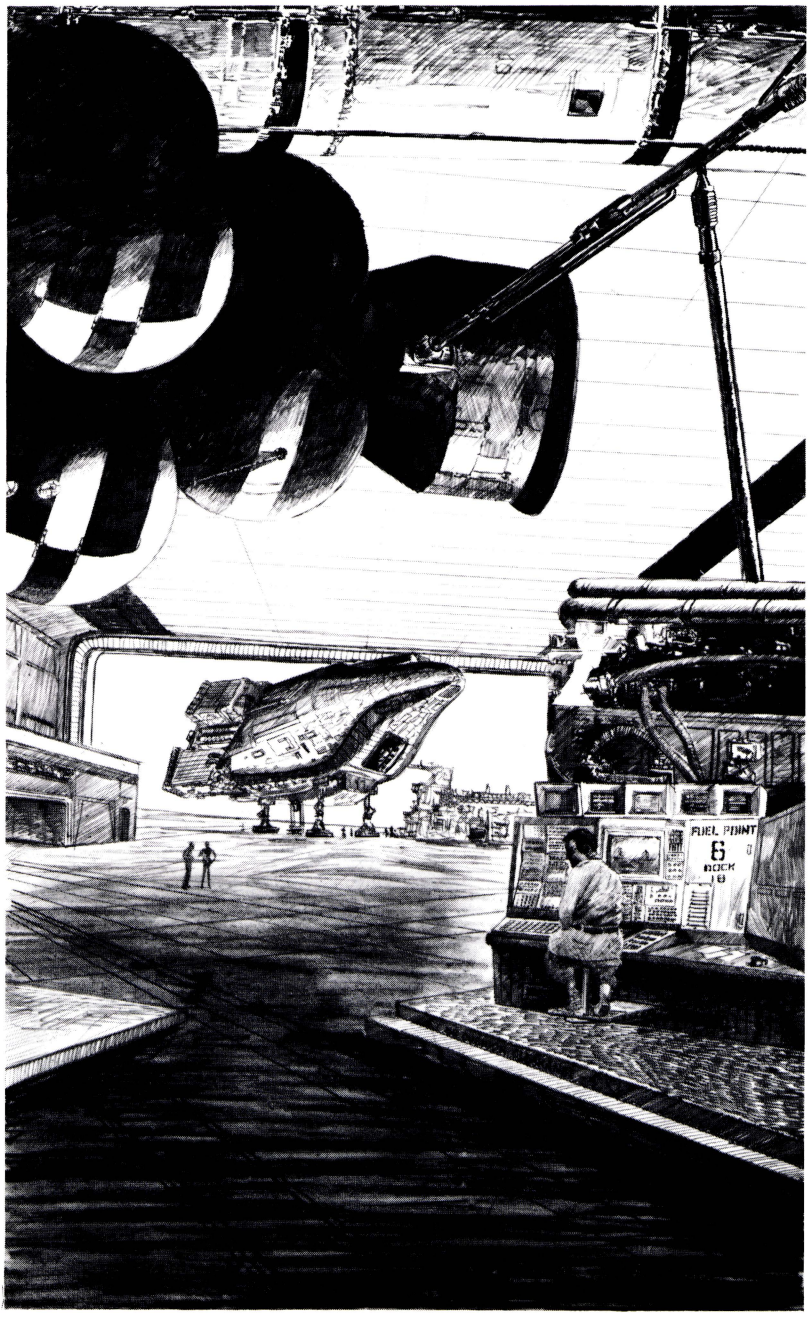
Mustering-Out Benefits

Imperial Science Union: The ISU is a society of the best scientific minds in the Imperium. Their loyalty is strictly apolitical; in fact, they are often seen travelling unhindered through war-zones, because most interstellar communities have agreed not to disturb their functions. In return, the ISU shares its developments with all peaceful nations, providing an impetus for peace. The ISU provides its members with a free high passage each month, or free transport on a ship under ISU control.

Laboratory Equipment: Specialist

Continued on page 30

From Port to



Jump-point

This article is designed to give a feeling of real scope and magnitude to the universe as players move amongst or about the worlds of your **Traveller** campaign. Go to an international airport today and you can feel the throb of human activity, commerce unbounded, and people travelling to and fro. I hope this article might imbue your campaign with just that sort of feeling.

With numerous publications giving us starport designs, I was able to put together expanded encounter tables for ships found in-system everywhere from port to jump-point. Some additional designs were done to give my players added options in choosing from "standard" starships. Also, some of the standard ship designs did not fit well in my campaign based in the Solomani Rim sector. The jump-1 merchant traders are good on the Spinward Main, but there are fewer "mains" in the Solomani Rim and in my own computer generated sectors.

Several recent publications, most notably Book 6, *Scouts,* have shown us how to give a star system the full grasp of reality by adding generation of or details about the other planets and stellar types in-system. My microcomputer programs had already expanded the star systems with similar detail before the publication of Book 6. The added bodies in-system lead to my enhancements on jump technology with simple extrapolations from **Traveller**'s basic rules.

STARSHIPS IN PORT

Economy is the circulatory system of the Imperium in which trade is the heartbeat and merchant trading vessels are as corpuscles. Planets fell in the Long Night without the aid of off-world technologies and goods. Trillions of people in the Imperium depend upon the interstellar commerce system by which megatons of cargo are transported thousands of parsecs in a single week.

The number of starships found in any given starport at any given time would be directly related to the quality of that facility and the population of the star system containing the starport.

Consider the Sol subsector in the Solomani Rim. Based upon the value listed for subsector population and the number of worlds with population A, we could estimate Terra to have a population of about 18 billion people. That is a hefty amount of people to be taken care of on just one planet's resources. If we look at a particular star system, we may develop the starport scene by adding details from the following system.

When players arrive at a starport, take the population digit from the system's UPP (use total population of the star system if it is scattered on several planets) and subtract a number related to the quality of the facility. This subtracted number will be 0 (for type A starports) to 4 (for type E starports). Type X starports are special and should be handled by the referee fitting his or her own adventure demands. The same thing goes for lower grade facilities in low population systems. If you, as referee, need another ship present in-system, then put one there. This system is intended to provide a backdrop for the adventure.

For type A starports, give a DM +1 per die thrown, and give a DM −1 per

die thrown for starport types D and E. Treat negative numbers as zero. The number of pips thrown equals the number of ships in port. Also, for worlds with a population of 9 or A (in the billions) and a starport type of A or B, place one starport for every five billion increment in population. In the case of multiple facilities, all of the starports in-system need not be of the same class. This will usually apply only to A or B type ports. I leave it to the referee to decide how many ship yards (based upon starport yards) are present in the system. If there are three starports at one system, he or she may make all three class A facilities or may make only one class A and the other two into class B ports, etc.

For example: The type A starport facility at Terra (Sol 0207) would have (Sol's population digit is A, or 10) 10 − 0 = 10D6 with DM + 10 ships when starport landing is made. The population of 18 billion dictates three starport facilities in-system. If you have an *Invasion: Earth* game map, that fits with the description of Terra, as well as making sense.

These rules consider only non-military vessels in both the down (surface) and up (orbital) facilities of the starport. Military vessels could be in-system depending upon encounter tables or the presence of an appropriate base. The starport shuttles and other service vehicles are to be determined by the referee in whatever manner he may see fit. A similar system could be used for Spaceports (Book 6) using non-starships and small craft.

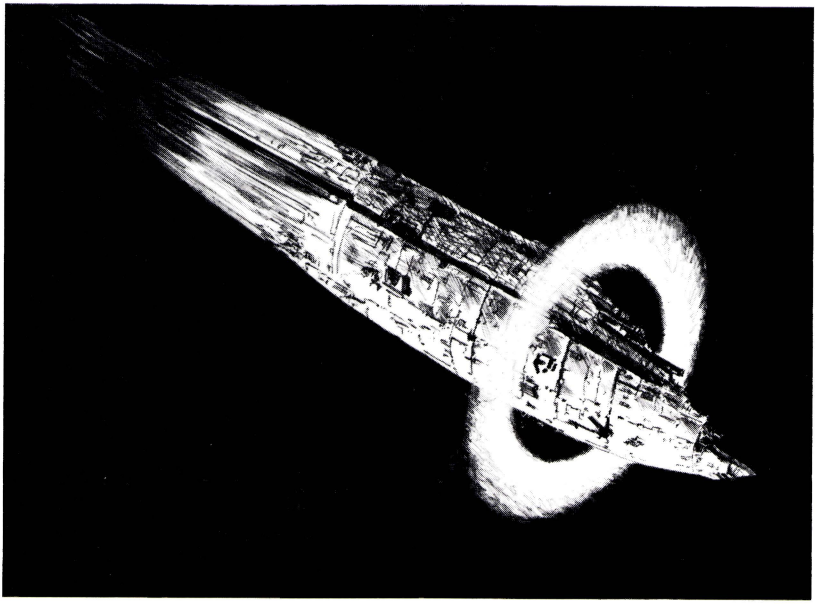
This gives a possible range of 56 to 178 starships total in the three Terran starport facilities, a believable quantity for such a star system. A similar quantity might exist describing Mora/Mora in the Spinward Marches.

To determine how long any particular ship will remain in the docking/landing bay, roll 1D6 with DM − 1. Treat zero as departure today in 2D6 hours and on a natural roll of 6 roll 2D6 for number of days until departure. For the higher population systems (UPP population 9 or A), apply a further DM − 1 for the initial departure throw. Since size and itinerary are a factor in a ship's decision to make planet-fall, most ships in A, B or C starports could be located in the orbital facility. Remember that class D or E ports, orbital facilities are not the norm.

You need not establish what type of ship is represented by each of the above determined die pips, but the quantity can tell you whether or not a certain type of ship is in port if your players seek it.

You could use this system to further describe the individual starport visited using the maximum number of pips generated as 1½ to 1 times the number of landing/docking bays available at the down or orbital facilities. Terra would have from 47 to 70 bays available for starship use at her type A facility. This means a high roll would force an inbound ship to wait for debarkation or it might have to pay a starport shuttle to off-load the ship's cargo. Starports are businesses too, and they will provide only a modicum of space with costly starship refreshment devices. This investment will rarely sit around unused. An inbound starship should have to wait in a "parking" orbit for no longer than a day or two.

Using the above example, our players have just arrived in the Terra system. Since we have three facilities, we can treat one of them (say Phoenix) as a type A port and the other two as type B ports. We have a maximum of 178 ships in port, and (as it is a busy star system) we will say that there are 70 docking berths at the Phoenix facility. This means that the ship in which the players are arriving could be given immediate inward clearance to Docking Bay 47. They are



registered there for one week a Cr100 charge to the ship's account with option to stay additional time at Cr100 per day. They are seeking the Mercenary Cruiser Anacreon which, according to the polite Starport Flight Control officer, is just down the port concourse from them in Bay 36. Maybe our group will run into some dazed looking solicitors from the Church of Cathay, leading them into who knows what kind of adventure now.

JUMP-POINT: TO AND FRO

The **Traveller** Book 2 description of jump is dependent upon distance from a given body in the star system. Since we may now generate many bodies in the solar system, let us make an in depth analysis of the jump technology at work in the **Traveller** universe.

The presence of mass disturbs the local space-time continuum in such a way as to have an effect upon the injec-

Number of D6*

	Population										
Starport	*A*	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*0*
A	10	9	8	7	6	5	4	3	2	1	—
B	9	8	7	6	5	4	3	2	1	—	—
C	8	7	6	5	4	3	2	1	—	—	—
D	7	6	5	4	3	2	1	—	—	—	—
E	6	5	4	3	2	1	—	—	—	—	—

Starships depart port in 1D6 days (DM −1 for UPP population 9+). A result of 0 departs in 2D6 hours, a result of natural six departs in 2D6 days. There is presumed to be one starport of equal or lesser quality to the original for every 5 billion population. Treat Negative pips as 0.

tion into or out of jumpspace. This is true of bodies in size from starships and up to and including stars. If a pilot or navigator is not cautious, a misjump may result from close proximity to a massive object. Since this hyper-dimensional physics construct is based upon mass, the extrema of the jumpspace function fall to simple diameter ranges in which it is safer to enter jumpspace. The thumbnail rule is, a body can not affect a jump when made from beyond 100 of that body's diameters.

This does not preclude other bodies from affecting the attempted jump. Many times, the unsafe jump radius is completely within that of a larger unsafe jump radius. In the Terra (Sol 0207) system, the orbits of Mercury and Venus are contained completely within the 100 diameter limit of the G2 star Sol. It should be noted that this formulation does not take into account extremes of density.

Keep in mind that these rules for entering and exiting jumpspace only prescribe the minimums within which the transition is considered safe. Nothing prevents a starship from entering/exiting jumpspace beyond 100 diameters of any normal mass. This simply defines how close you may safely get to an object. That is, after all, the usual intent of travel.

Another concept to be considered, is that of *star system jump-point cascade.* Depending upon the masses in-system, there are a number of points defined in space in which a vessel may leave jumpspace. These points are in actuality three dimensional spherical surfaces, but for simplicity, are referred to as jump-points. They are labeled J-1 through J-6 in order or largest to smallest masses. Most systems have thousands of jump-points, but these are limited in access due to the way the jump drive functions.

The jump-point at which a ship may appear is dependent upon the Jn (Jump number) of the jump drive installed on the ship. Navigation skill may be used to determine how close a ship may arrive at an "optimal" point on the jump-point.

The jump-point J-1 is the largest solar mass in-system and the next largest mass in-system with an unconfined jump-point is J-2, and so on. Confined jump-points are those such as the 100 diameter surfaces around Mercury and Venus. For a jump-point to be unconfined, that surface may not intersect any other 100 diameter surface of a larger mass. This means that a starship could have an unconfined jump-point if it were outside the jump-point of a planet or star. However, a starship mass would not cause a planet's jump-point to be unconfined.

The mass of the starship does not allow entrance into jumpspace unless it equals or exceeds 100 tons displacement mass. This is why starship design requires at least 100 tons for jump drive installation.

In the cases of multi-stellar systems of wide separations, if the masses are outside of 1000 diameters, the mass systems are treated separately, and it must be specified as to which of the jump mass vortices are entered by the arriving starship. Every object within a 1000 diameter sphere of a given mass defines a jump mass vortex. For objects outside that region, set up another vortex based upon those independent masses. For vertices within the same parsec, jump-1 is sufficient to travel between them. A jump-1 is how ships travel from Regina/Regina (Lusor) to Gagamshir/Regina (Darida), a simple 5000 AU hop, still taking one week.

The Jn of the ship is the range of jump-points at which a starship leaving jumpspace may re-enter normal space. A ship with Jn of 6 may arrive at any of the points J-1 through J-6, pilot or navigator's option. A ship with only Jn

1 is limited to the solar point. It should be mentioned that that is not so terrible due to the usual proximity of the system's prime to J-1. If the jump-point contains a partially defined jump-point, such as Titan's about Saturn, then at no time are the rules for distance allowed to be violated; hence, you may have multiple bodies served by one jump-point. In the Sol system, a J-3 entrance could be made at 100 diameters from Titan and at least 100 diameters from Saturn (the third largest mass in the solar system).

The computer software available provides for jump programs giving jump from one to six parsecs. The jump-1 software may also provide for an in-system jump to be made (sometimes referred to as jump-0). The rules are simple, requiring that the in-system jump take fuel equal to a jump-1. The jump-point rules apply and the so-jumping ship may add or subtract its Jn from its current jump-point position. So, a ship with Jn of 2 starting at either J-1 or J-5 could do an in-system jump to J-3. The time it takes to complete that jump is 1 week.

The in-system jump is not the safest technique in space navigation. Add three plus the number of jump-points by-passed in the jump zero to the throw for misjump, and if successful, arrive at the gas giant located at J-2. A type C mercenary cruiser could make the jump from J-4 to J-1 with a DM +5 for misjump, and if successful, arrive at the system's solar jump-point.

Unconfined Jump-points in Two Sample Systems

	Terra/Sol	*Regina/Regina**
J-1	Sol	Lusor
J-2	Jupiter	Assiniboia
J-3	Saturn	Olybrius
J-4	Terra	—
J-5	Mars	—
J-6	Ceres	—

**Lusor only.*

Note: Terra is just barely an unconfined jump-point. Titan is partially unconfined at J—3 Saturn. Olybrius is an unconfined J-3 only when it is farthest from Lusor, and may be partially confined when nearest to Lusor. Regina is easily accessible through J-2.

Encounter Tables

In creating the encounter tables, I put together a list of all of the possible ships which players might encounter in my campaign, grouping them by type and jump capability. Then, I determined how a region of my campaign might look at a random sampling (i.e. is space full of free traders or corsairs, or whatever). Checking out the abilities of the vessels at hand, I ended up with a chart of small merchants, large merchants, xboat related vessels, naval cruisers, battle cruisers and corsairs. I had also put in a special table for ship's unique to a region. Of these, I decided that the greatest variations in encounter types would be merchants.

The large merchants were vessels obtained from the ship directory in the the *Traveller Adventure* or ships I had put together using *High Guard*. This ship list was capable of jump-4 or greater operations, so I decided that their capabilities would suffice to allow encounters with them anywhere in my campaign, given a reason for their being there. This was not the case with the small merchants (less than 1000 tons).

The type-A free trader can only make jump-1. So I divided up the small merchant encounter table into three categories: jump-1 routes, jump-2 routes, and jump-3 routes. If a ship does not have the jump drive to get it someplace, you probably won't find it at that place. This is not to say that it could not get there, using such things as L-Hyd tanks, but these are the exceptions and

not the rule.

The A2 far trader presented in Supplement 7 may be found on the jump-2 routes and the type M subsidized liner may be found on the J-3 routes. A smattering of other ship types, such as a chartered type S scout, etc., gave me a well populated encounter table. The lack of a good merchant trader capable of greater than jump-2 prompted the design of the Type R2 deep trader listed below.

I needed a vessel with a little longer range, but still within the economy of the player character, so I used the 400 ton Book 2 hull and went to work. If you have done Book 2 starship design, you know how tough it is to get higher jump numbers in a small ship and still have room for cargo. I solved the dilemma by giving the ship fuel enough for two jump-2. It could travel 4 parsecs by doubling the amount of time to get somewhere (a reasonable compromise given the construction constraints). The other implication of this allows a trade team to get into a system without having to refuel in that system. This is useful if there is no gas giant or available water to be refined at the destination.

The deep trader opens up new (and potentially untapped) markets to be exploited or adventure situations to be caught up in.

The naval cruiser and battle cruiser tables were built upon designs available in Supplement 9, *Fighting Ships.*

Once I had designed all of my tables, I constructed a master encounter chart deciding the probabilities of encountering which of the above mentioned ship types in the tables. This master chart could be different from area to area in a given campaign, allowing variability in encounters.

What Does It All Mean?

All of the chrome added to the encounters in-system in my campaign have created situations which have added color to the main ongoing interests of the players. The hijackers trying to get a ship which has been waiting in parking for a bay to open up at a starport. The red giant star with a surface density so low that the J-1 point is actually beneath the surface of the star! My campaign is set up to de-emphasize starship conflict in the form of battles. They can lead to excessive quantities of character generation, and I don't enjoy that. However, I have had players frightfully making in-system jumps to avoid that naval interdiction patrol in the red zone and wishing they had never gone there in the first place.

I've put this chrome in my campaign. Try it youself!

— *Leroy W. Guatney*

Continued from page 23

equipment and materials up to MCr 1.5 in value. The items received must be directly related to the recipient's specialty.

Lab Ship: This ship may be the one described in Supplement 4, *Citizens of the Imperium,* or may be one of the referee's own design. If this benefit is rolled twice, the ship contains lab equipment as noted above, otherwise the recipient must supply and equip it himself.

— *Jeffrey Groteboer*

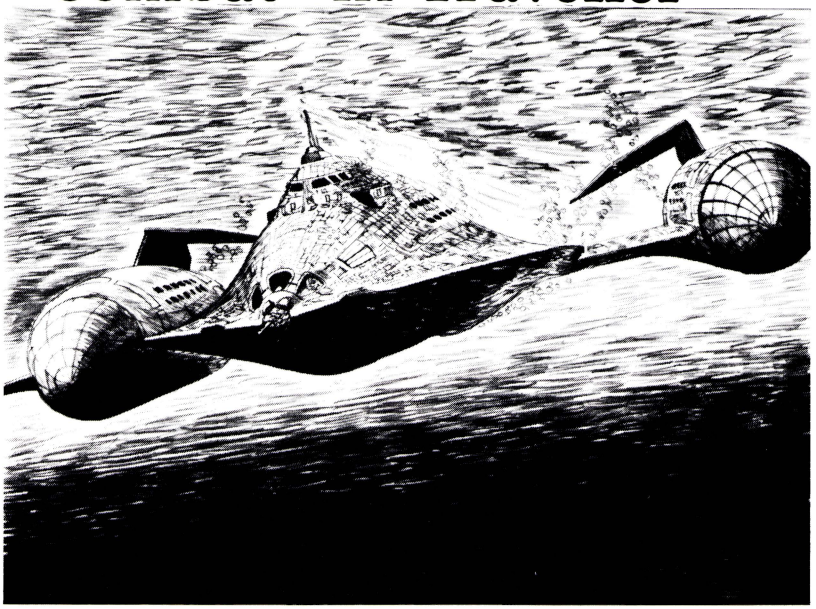
Continued from page 17

mine political ramifications of the national groupings. On other worlds, populated hexes will represent major cities and trade centers. The referee may wish to draw in highway and rail nets, even air and sea lanes, where appropriate (and, of course, starports).

With these guidelines and a little imagination, referees can generate worlds for their players to explore and adventure in that will facilitate exciting play without the need for constant planet-hopping.

— *Chris Struble*

Seastrike—Underwater Combat in Traveller



Recently I ran a duel between a submerged system defense boat and various surface and airborne vessels, and I realized that the description of SDB's in **Traveller** Supplement 7, *Traders and Gunboats* fails to cover this important aspect of their operation. An SDB is designed for use in all the environments it may encounter—space, a gas giant's atmosphere, or underwater—but the technology involved is not detailed. I assumed there must be some restrictions on underwater operation, when compared to atmospheric or space conditions, and I prepared the rules below. Most are usable with **Traveller** Book 2, *High Guard,* and *Striker.* They don't cover the actual construction of underwater vehicles, and assume that any weapon may be taken underwater without harm, provided they aren't used.

MISSILES AND PROJECTILE WEAPONS

No projectile weapons, other than missiles and special devices (e.g., spearguns), will function very well underwater. Missiles are exempt from this restriction because they are self-propelled. CPR weapons (and other projectiles) might be fired from a submerged AFV, with the barrel of the weapon protruding above the surface. In this case, the weapon must be modified, as in rule 2 below (mainly to enable water to be quickly drained from the barrel), but the projectiles can be normal.

SPACECRAFT

Since spacecraft must sometimes fight in a gas giant's atmosphere, their missiles are assumed to be built to withstand the stresses involved. These are greater than those encountered underwater, so it isn't necessary to build special missiles for underwater use. Similarly, launchers and other equipment will withstand immersion indefinitely. Control, however, may be a problem. Range will certainly be reduced, since water is denser than air or vacuum, and it takes more power to drive something through it.

STRIKER

Underwater operation requires waterproofing and special modifications to some weapons. Control systems may need substantial changes.

1 (*Striker* only): Add 50% to the weight and cost of all missile components, and modify fuel accordingly.

2 (*Striker* only): Add 30% to the weight, volume, and cost of underwater missile launchers (not autoloaders, controls, etc.).

3: Underwater missiles (torpedoes) have 10% of normal range in air, .1% of range in space. Missiles travelling above the water to a surface or flying target do not suffer this modifier.

4: There is a DM−4 to hit with underwater missiles, a DM−2 when firing missiles from a submerged vessel at a surface or airborne target.

5: Acoustic or magnetic guidance systems may be fitted to underwater missiles, at double normal guidance system costs, to reduce the submerged targeting DM to −2 (**Traveller**/*High Guard* add 10% to the cost of the missile).

6: Target designation and manual aiming systems require a specialized periscope or radio antenna, if the vessel remains submerged. See notes on periscopes, below.

USE OF MISSILES

Spacecraft expecting possible underwater operations will carry some specialized underwater warheads to complement their normal stock. AFVs (other than specialized submarines) might modify one weapon for underwater operation. An SDB would probably carry specialized warheads for 50% of its missiles. Underwater warheads should be chemical, not nuclear (a nearby underwater nuclear explosion can have bad effects on a submerged vessel). TDX warheads are useful against surface ships, but might fail to cause serious damage to ACVs or hydrofoils.

LASERS

Gas giant atmospheres should be reasonably transparent to lasers, though reduction in range is likely. Lasers, however, are easily dispersed by water. Beams would lose significant amounts of energy as they passed through water, as though they passed through military "fog" aerosols or sandcaster dust.

1: Lasers must be modified to fire underwater (adding 15% to cost and weight), or suffer damage from thermal shock and steam erosion. This isn't necessary if the laser is fired through a special periscope (see notes on periscopes, below).

2: Lasers suffer a DM−1 to hit and a damage DM−1 per meter of water they penetrate, regardless of power (at TL13+, −1 per 5 meters of water penetrated).

3: Lasers firing from water to air, or from air to water, suffer an additional −3 penalty to hit, due to refraction (bending of light) at the air/water boundary. This effect also occurs with x-ray lasers (TL13+).

Use of lasers: Lasers can be useful underwater, as short range antipersonnel weapons, or for point-blank attacks. An SDB or AFV with underwater capabilities might mount a laser periscope, or the like just under the surface to fire at aircraft or surface vessels.

MESON ACCELERATORS

These systems can be used underwater without modification, and are probably the most lethal armament for a submerged AFV, provided accurate target location is possible. SDB's probably won't carry these weapons, since most warships are thoroughly protected against this form of attack.

OTHER ENERGY WEAPONS

Underwater operation poses serious problems for most other energy weapons.

1: Plasma and fusion weapons must be extensively modified to fire underwater (add 75% to price and weight), and suffer a DM−4 per meter of water penetrated, regardless of tech level. Particle weapons cannot be used underwater. See the notes on water as armor, below.

2: No energy weapons, other than lasers, can be used through periscopes.

Use of Energy Weapons: Energy weapons might serve in similar roles to lasers—as short-range defensive armament or for use against aircraft and other close targets when minimal water penetration is required. Discharge of such weapons underwater would be marked by clouds of steam, giving clear indication of the firer's location.

PERISCOPES

There are many types of periscope, for observation, communication, and for offensive use. Prominent types are listed below.

Simple Optical periscopes have a fixed-angle lens and no intensification or enhancement features. They are small and inconspicuous, presenting a minimal radar reflection.

Schnorkel Tubes supply air to an air breathing power plant or overpressure life-support system. Price, weight, and volume are for a minimal system, adequate for power plants up to .5 megawatts. Add 5% per .2 megawatts above this size.

Compound Optical periscopes have zoom lenses, controls for tilt and close focusing, and fittings for cameras and image enhancement devices. At TL 8+ they can be computer-controlled, linked to gunnery computers and other special equipment.

Radio and Radar Antennae are priced as bare metal masts with appropriate cable systems. The prices, sizes, and so on, do not include the equipment they are linked to or support.

Laser Communicator/Target Designation periscopes are always complex optical designs, and can be used for normal observation. The laser system is an integral part of the periscope (but must be purchased separately), and can't be removed for normal operation.

Laser Weapon periscopes are listed with price, weight, and volume for a 1 megawatt laser. Add 5% to price and 1% to volume per additional megawatt, add a cumulative 10% extra cost per meter of length after the first, and subtract 5% price and 1% volume per TL above 8. A starship laser, for example, is a 250 megawatt design, so at TL 12 a 4 meter periscope would cost Cr1,000 + (50 × 249) = Cr13,450 for the first meter, plus Cr13,695 for the second, Cr15,064 for the third, and Cr16,570 for the fourth. This totals Cr59,779, minus 20% for tech level 12, or Cr47,023. Its weight would be 697

PERISCOPES

TL	*Type*	*Weight*	*Cost*	*Volume (m^3)*
5	Simple Optical	20 kg	Cr150	.06
5	Schnorkel	30 kg	Cr200	.1
6	Compound Optical	30 kg	Cr300	.1
6	Radar Antenna	60 kg	Cr800	.4
6	Radio Antenna	25 kg	Cr400	.1
7	Laser Designator/Commo	45 kg	Cr600	.1
8	Laser Weapon	50 kg	Cr1,000	.4

kg, its volume 5.36 m³.

The laser is purchased at normal rates, built into the periscope, and can't be separated from it again. Aiming and targeting use secondary systems within the weapon periscope, shut off when the laser fires. Laser weapon periscopes require a dedicated periscope mount (at the same cost and weight as a hardpoint and minimal turret), or can be incorporated into turrets to function as periscopes and as normal turret-mounted lasers.

Use of Periscopes: Many Vehicles, apart from "pure" submarines and SDBs, can benefit from periscopes. For example, a grav vehicle could mount a laser weapon periscope and wait in a lake to ambush troops or enemy vehicles. A primitive AFV could mount a schnorkel tube and cross a river underwater. An SDB expecting underwater operations would probably mount at least one specialized laser, incorporating the necessary lenses and prisms for periscope operation, per dorsal turret.

SENSORS

Depending on the tech level of the design, various forces of underwater sensing systems are available.

Hydrophones and Sonar Detectors are simply sensitive sound amplifiers, capable of detecting engine noises, vibrations, and other acoustic disturbances. Both systems give a bearing to the sound source; the sonar detector also indicates range, but is limited to interpreting sonar transmissions. The best defense against these systems is silence.

Sonar is an active detection system, using sound waves which are reflected off submerged objects. It can be blocked by layers of water at different temperatures, obscuring objects (such as schools of fish or icebergs), or by advanced ECM methods.

Magnetometers detect disturbances in a planetary magnetic field (if one exists), but can be confused by magnetic storms, ECM, large metallic objects (such as shipwrecks), and large deposits of magnetic ore.

Mass detectors respond to variations in the planetary gravitational field, and are especially sensitive to grav units and rapidly moving objects. Jamming isn't possible, but large objects (such as icebergs), large animals (such as whales), and mountainous seabeds may obscure or imitate a target.

All of these sensor types may be carried by surface vessels or deployed by aircraft. Other sensing systems, such as infrared and thermal imaging, and normal acoustic detectors, may be mounted in periscopes or used by surface vessels and aircraft.

Use of Sensors: Most vessels or AFVs designed for underwater operations will carry sensors. Their exact nature depends on the job involved. An SDB, for example, would probably carry hydrophones, sonar, sonar detectors, and a magnetometer, plus radar and normal spacecraft sensory equipment. In some campaigns, standard spacecraft avionics will include a few of these items; equipment which is not normally included should be added to the cost and

Sensors

TL	*System*	*Weight*	*Cost*	*Range*	*Mode*
5	Hydrophone	150 kg	Cr1,200	1.5 km	Passive
6	Sonar	1300 kg	Cr20,000	3.0 km	Active
6	Sonar Detector	100 kg	Cr3,000	2.0 km	Passive
8	Magnetometer	2450 kg	Cr35,000	5.0 km	Passive
9	Mass Detector	5600 kg	Cr95,000	10.0 km	Passive

weight of a ship. The *Striker* design sequences don't imply any standard avionics, other than controls for grav vehicles, so all items must be added to an AFV's cost and weight. Sonar and other observation systems can be used in the same way as normal rangefinding and sensing equipment, as in *Striker* rules 46, 49, 51, and 55.

WATER AS ARMOR

Water can absorb great amounts of energy, and as such is highly resistant to energy weapons; for example, a 1-megawatt attack would only vaporize 440 grams of water a second, or heat a cubic meter of water by less than one degree. The notes on laser weapons (above) assume that water is partially transparent to light, so that the main energy losses are due to dispersion.

Water will also retard physical projectiles. For purposes of *Striker,* water has an armor value of 2 per meter.

For *High Guard* use the following values:

Armor	0	1	2	3	4	5	6	7
Water (m)	30	32	33	34	36	37	38	39

Water armor factors are cumulative with other armor, so a *High Guard* hull factor O vessel under two meters of water would have an effective hull factor of 1; a *Striker* vehicle with armor 10 at the same depth would be equivalent to armor 14.

SUBMERGED RADIO/JAMMER/ECM OPERATIONS

Striker: Reduce power of radio jammers and transmitters by 10% per 5 meters submerged depth, assuming no antenna or other equipment protrudes above the surface.

High Guard: Reduce ECM rolls by −1 per 5 meters submerged depth, assuming no antenna or other item of equipment protrudes above the surface of the water.

VISIBILITY

Unenhanced underwater visibility has a maximum range of 100 meters, reduced by 10% per 10 meters submerged depth, in normal circumstances. Submerged objects are visible to surface or air observation within a 45° cone directly above the position of the object. Naturally, weather or such conditions as suspended silt may reduce visibility to zero.

AFTERWORD

This article isn't a definitive account of underwater combat for *Striker* and **Traveller**, but should help referees deal with this interesting environment. Additional rules might cover submarine design and propulsion, streamlining, crew morale, weather, ice, and other topics.

Sources of inspiration for adventures include films such as *Run Silent, Run Deep* and *Ice Station Zebra,* naval histories, novels such as Frank Herbert's "Under Pressure," and the television series *UFO, Thunderbirds,* and *Voyage to the Bottom of the Sea.*

— *Marcus L. Rowland*

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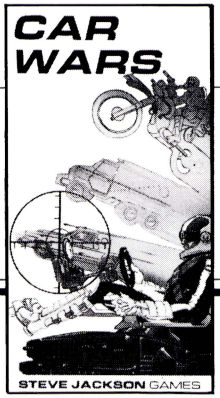

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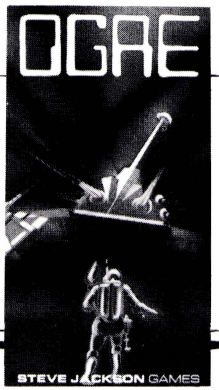

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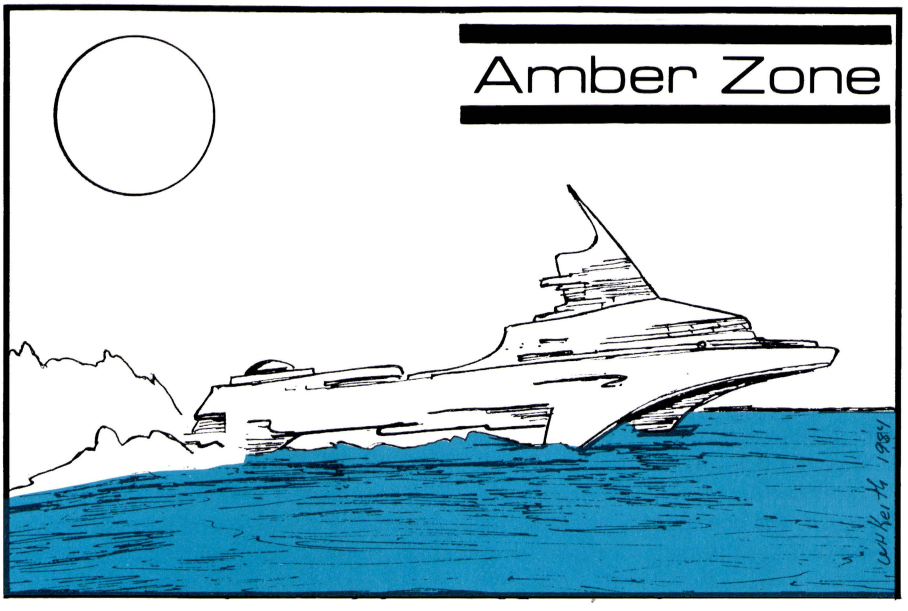

The Thing in the Depths

PLAYERS' INFORMATION

The team's ship has landed on Sturray (0304 C-7A9215-A) for minor repairs which will take at least three weeks. Sturray is the only world of a red dwarf, and has a methane/CO_2 atmosphere and a cool climate. The only native life forms are bacteria, algae, and a few primitive seaweeds. It's a mining planet, exporting rare earths and light metals dredged from the seabed.

The port is to the south of the northern polar landmass. Latitude and orbital tilt currently give a 45 hour day and 5 hour night, with the sun rarely rising far above the horizon. The effect resembles dim red twilight. Half the population works in and around the dome, the rest run deep water dredges, refining plants, and supply hydrofoils.

A few days after arrival, the team hears that a dredge is believed sunk. There is no news of the 12-man crew. Supply ships are diverted to look for survivors. A day later the colony is rocked by the news that one of the search boats has also vanished. That evening, Jackson Hollis, the colony manager, visits the team. He is outfitting a hydrofoil with a variety of scanners and detectors, and needs personnel with experience in using such advanced equipment. He can pay Cr250 a person a day.

Hollis will state that he can't afford to take company technicians from their normal work to man the hydrofoil. If the team refuses, he will be forced to stop work on their ship, since the technicians will be needed to man the search boat.

The hydrofoil is equipped with sonar, magnetometers, radar, underwater cameras, and other detection equipment, and diving and rescue gear, along with an air/raft. The team can add equipment from their ship.

REFEREE'S INFORMATION

The mystery is caused by an old

system defense boat, which crashed 45 years before the colony was established. The SDB was travelling to a navy dockyard for major computer repairs when its shuttle misjumped into the Sturray system. The SDB landed on Sturray to refuel, but lacked computer aid when selecting a landing site and chose a cliff which collapsed into the sea, killing all aboard. The shuttle crew were left marooned, and eventually starved to death. The shuttle's orbit decayed long ago, and it crashed. Since the scoops were open when the crash occurred, the SDB power plant has remained fuelled. The computer is still active, though damaged, and occasionally activates the drives to move the ship in an underwater evasion sequence. It also operates weapon and anti-hijack systems. Anything the computer considers a threat will activate these systems.

The dredge ran into the SDB while it was resting on the bottom; it retaliated by firing an HE missile which sank the dredge, but shock waves also knocked out the SDB's missile systems. Later the search hydrofoil passed through the area using sonar, which was interpreted as a hostile probe. The SDB tried to fire another missile, but the system wouldn't work so it rammed the hydrofoil instead. The wreck is still partially afloat, but the only survivor is isolated in the remaining pressurized compartment, the galley, and can't reach the radio or controls. The SDB is now moving NE out of the search area.

The referee should try to sustain an air of mystery and horror throughout this adventure. The first clue to events should be the discovery of the wrecked dredge, under 300 meters of water. Underwater cameras will show that it has been blown apart, apparently by an internal explosion. The missile struck underneath, and the marks are buried under hundreds of tons of wreckage. It is obvious that there are no survivors.

Next, the team will find the wreck of the supply ship, and the only survivor. He knows only that the ship suddenly lurched sideways and began to sink, without any explosion. A thorough search will find marks of the ramming, though nothing to indicate the cause.

Further events are left to the referee. The SDB may attack another ship, or even the survey hydrofoil. It may simply disappear, to remain a worrying enigma for the adventurers. Eventually, persistent searching will track it down, and the team must then enter the hull and evade the anti-hijack systems to deactivate the boat and computer. The SDB is unfit for space, but could be salvaged for power plant, drives, and other components worth MCr1-3. The shuttle is intact, and well worth salvaging. Naturally, the mining company will want 50% of any profits. It was, after all, their hydrofoil which made it all possible.

— *Marcus Rowland*

Continued from page 12

worlds of tech level 14+, and with a population level of 5+ (less populous worlds don't have the necessary technical and medical facilities). Then there is cost. The implant itself costs MCr10 to produce and implant. Equipment to permit a computer to be linked to the implant costs a further MCr2 (linkage equipment is available on most tech 14+ worlds). The remote terminal costs MCr1 (it weighs 5 kg). Thus, it can be seen that use of an implant is limited to the very wealthy or to those with high governmental or commercial positions.

For the character with enough money and the proper mental conditioning, a computer implant can be an extremely useful tool. Like all tools, however, it can be misused and prove dangerous.

— *J. Andrew Keith*

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Contact: The Hlanssai

The Hlanssai are a humanoid minor race, originating in the Vargr Extents but now to be encountered throughout much of the Imperium and other areas. They are widely admired for their artistic talents, grace, and dexterity, but many members of other races distrust the Hlanssai because of their—justified—reputation for emotional instability. Nonetheless, sheer wanderlust and versatility has carried the species far.

Background

The Hlanssai evolved on Vrirhlanz, in the Vargr Extents (B-657721-7), a planet not totally unlike Terra. Their ancestors were intermittent/gatherer types, adapted for a semi-nocturnal existence in moderately forested areas. This species already possessed a fair level of intelligence when tectonic shifts created a "land bridge" between two continents, allowing a large number of different—and frequently dangerous—species to invade the proto-Hlanssai's home environment. The resulting evolutionary pressure encouraged flexible, intelligent behavior, but this was only part of the result. The new dangers confronting the Hlanssai demanded the ability to perceive situations quickly and in detail, and an awareness of all possible subtleties in a given situation. The race already possessed the acute senses of the sometime night-dweller; evolution now enhanced these to exceptional levels. Hlanssai intelligence was the product of the need to analyze and comprehend these sensory inputs; Hlanssai psychology is therefore oriented overwhelmingly towards immediate sensual awareness and possible responses, and the species' philosophies are generally sensualistic, frequently dismissive of the long term, and notoriously sybaritic and hedonistic. A Hlanssai will usually respond to each situation as it occurs, with little regard to long-term consequences,

—and often, therefore, dramatically. This is not to say that Hlanssai are psychopathic or vicious; they are capable of personal loyalty and affection, and their capacity for empathy is quite phenomenal, but enduring trust is alien to them.

Physically, Hlanssai are tall, averaging about 2.1 m, but very light and slender of build, rarely massing more than 55-60 kg. The race is homeothermic, bisexual, and vivaporous, producing one or two young after an eight month gestation period. Hlanssai bodies are about 50% covered with a silky, glossy yellow fur, and the race seldom bothers with clothing; the most striking visual feature is the head, with its two large eyes and two even larger ears. The former are sensitive to a range of frequencies extending into the ultra-violet; the external flaps of the latter serve to detect thermal radiation and air currents with considerable efficiency, as well as focusing sound into a highly efficient inner ear. The race's hands have three three-jointed fingers and a stubby, unjointed "thumb" each; their feet are similar, and can provide some grip, especially when climbing.

Society

Hlanssai culture had achieved a kind of static equilibrium when the race was first contacted by the Vargr, and the systems then used have changed only slightly since. Hlanssai psychology dictates that complex, rigid social systems and long-range planning are impossible, and even familial or tribal bonds are weak; balancing this, the species' drive to cooperation in the face of immediate danger is quite powerful. The result is a system of administration by a system of self-interested cliques and participant democracy, anarchic to most non-human eyes but acceptable to most Hlanssai. (A Hlanssai who finds it unacceptable usually either forms his own clique or takes to demagogic politics.) Personal violence and theft are quite common, but represent a sufficient immediate personal danger to Hlanssai in general to trigger the cooperation instinct. Larger scale organization for long-term aims is rare, generally only occurring when an unusually capable and charismatic Hlanssai perceives a particularly strong racial need, and persuades his people to work together to meet it.

Normally, the Vargr have poor relations with minor races within their territory, but the Hlanssai are an exception to this rule. The species' immense versatility, subtlety, and talent for empathy enable them to persuade most other races of their usefulness, and Hlanssai social scientists, servants, traders and spies have travelled virtually everywhere that the Vargr have gone (and sometimes beyond). The Vargr generally regard the Hlanssai as useful, dangerous, and fortunately weak; the Hlanssai regard the Vargr as graceless and unsubtle, but interesting and useful. Beyond the Vargr Extents, Hlanssai are widely seen as enigmatic, unstable, intelligent and interesting; Hlanssai attitudes toward other races vary, but generally involve curiosity mixed with ironic humor.

A final important concept to note when dealing with Hlanssai is that of "N'tarronth", and its converse, "N'tarronchii'a"—a further consequence of Hlanssai sensualism. "N'tarronth" is usually translated as "shaping" or "manufacturing", but it can best be expressed in human terms as "imposing arbitrary form upon the universe". Hlanssai are acutely aware of the distinction between the natural and the artificial, and regard one of the most important aspects of individual behavior to be the extent to which a being accepts external reality and acts within existing limitations. A being who rejects things-as-they-are and seeks to shape reality to

his or her will is N'tarronth and displays N'tarronth; a being who takes a passive, accepting view is N'tarronchii'a. Despite the fact that other races view them as mercurial and unstable, Hlanssai tend—by their own terms—to be highly consistent in being either N'tarronchii'a or N'tarronth, and regard an inability to choose between the two modes of behavior as decidedly odd, perhaps comparable with a refusal to eat or drink. This does not imply any question of good or evil in Hlanssai terms; simply a matter of normal sentient behavior.

It should be noted that—in general—music, applied science, law, manufacturing industry and exploration are classed as N'tarronth, whereas mathematics, figurative art and hedonism are N'tarronchii'a. To the Hlanssai, therefore, most other races tend to N'tarronth—which is, the Hlanssai would say, their business—but display an odd tendency to mix in elements of N'tarronchii'a. In other words, Hlanssai understand other species as little as other races understand Hlanssai.

HLANSSAI IN TRAVELLER

Hlanssai characters may be encountered throughout the **Traveller** universe, particularly in Spinward and Coreward regions, and in a wide variety of circumstances. Many of the race, afflicted with wanderlust, become roving artists, entertainers, animal-handlers or adventurers, and a strong disinclination to settle anywhere for long—and a matching inability to remain on perfect terms with one employer for extended periods—generally keeps these beings on the move. Some Hlanssai become "liaison specialists" in the employ of organizations of merchant starships engaged in exploratory work, in which function their immense capacity for empathy is extremely useful, but Hlanssai cannot accept discipline, and so rarely

find work in large, formal organizations, and never in military service. Referees should find it quite easy to operate Hlanssai, once their racial peculiarities are understood, and adventurous players might consider using such as player characters, although if Hlanssai are being properly role-played, no other player character will trust them, and no long-term aims will be pursued, which might prove an intolerable limitation for some.

Hlanssai characteristics are generated normally, with the following modifiers: −2 to Strength, +2 to Dexterity, −2 to Education; Social Status is always treated as 5 in human society, but position in Hlanssai society is determined on 1D+4. Normal human careers are not used; instead the following special rules should be followed.

Once a Hlanssai character has been created, it must be determined to be either N'tarronth or N'tarrochii'a. NPC Hlanssai are equally likely to be either, although some jobs are more likely to be taken up by adherents of one attitude than those of the other; if players are operating Hlanssai, they have free choice, but must always act in accordance with their choice. Any Hlanssai character acting in a fashion contrary to his or her choice for any significant period is probably in the process of going insane; in the case of player-characters, roll Intelligence or less on 3D to avoid having the character becoming catatonic. (Optionally, the referee can take over insane Hlanssai, operating them as totally unstable paranoids, psychopaths, schizophrenics or such like.)

A Hlanssai character then begins a "career," much like that of a human character and similarly broken up into four-year terms of service, but with a maximum of six terms and no automatic or obligatory re-enlistment at any time. One skill is automatically received per term of service, plus a second if a "study" roll is made (see below). No commission/position or promotion can be received. Other rules are as follows.

Required Rolls: No Enlistment roll. Each term, roll Survival— 6+; Study (for one extra skill)— 9+; Re-Enlist (if desired)— 4+. No DMs are applied to any of these rolls.

Skills: All Hlanssai may roll on the "Life" and "Activity" tables below for skills, or on the N'tarronth or N'tarronchii'a table according to chosen philosophy (consult the skills table, below).

Aging: Handle as for human characters, but give +1 to Dexterity and Intelligence saving throws, −1 to Endurance saving throws.

Benefits: Hlanssai receive no pensions, and roll once per term for mustering-out benefits: 1=Cash, 2=Blade, 3=Gun, 4=Low Passage, 5=Middle Passage, 6=+1 Education.

Roll:	Life Skills:	Activity Skills:	N'tarronth Skills:	N'tarronchii'a Skills:
1	+2 Dex	−1 End	—	+1 Dex
2	+1 Intel	+1 Dex	Mechanical	Hunting
3	+1 Intel	Liaison	Medical	Survival
4	Brawling	Survival	Vehicle	Recon
5	Liaison	Recon	Electronic	+2 Education
6	Survival	Weapon	JOT	Intel

Note: On a result of "Weapon," roll 1D6, on 1 take Bow Combat, on 2-4 take Blade Combat, on 5-6 take Gun Combat.

— *Phil Masters*

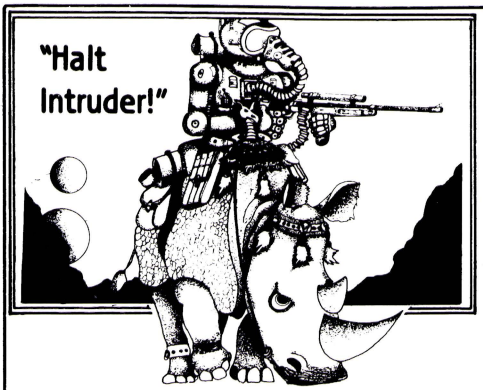
Continued from page 8
Kilopound (MTE/Kp) ratings of nuclear efficiency, and are based on actual maximums for that particular tech level, up through tech 8.0 (part I of table 2), and are projected beyond that (in Part II of table 2).

You will note that table 2 has added a column for yields in megatons (Mt.), for convenience, and a column for "Mass to Energy" conversion. The number of grams of mass actually converted to energy (in accordance with Einstein's famous formula) has importance in the next step. At tech level 9.0, the development of a practical, portable fusion powerplant makes possible the creation of a magnetic bottle to contain anti-matter, while the further development of man-portable plasma and fusion gun powerpacks at tech level 12+ reduces the necessary size for total conversion (i.e. matter/anti-matter) nuclear weapons. This is the next "revolution" in nuclear weapons, as reflected in table 2. In a matter/anti-matter (sometimes referred to as a "Contraterrene" or C-bomb) weapon, a fusion powerplant is used to create a magnetic bottle to contain a quantity of anti-matter equal to one-half the mass to be converted to energy. Detonation is accomplished by simply cutting the power to the bottle. The resulting explosion is usually more efficient than an H-bomb of the same yield, as can be seen from table 2. This is especially true at the higher yields, and gave birth to the "Michelson Thermostellar Device". At TL 9.0, the first fusion powerplant is used to create the first C-bomb, but it is practical only when the normal H-bomb mass would be above the 4,000 Kg. (plus anti-matter mass) of the powerplant. At TL 9.1, this upper limit is reduced to 2,000 Kg. when it is realized that a less powerful plasma can generate the requisite energy to preserve the bottle, a process which continues with the 500 Kg tech 10 and 100 Kg tech 11 units, thus allowing C-bombs to be practical at progressively lower yields. The development of the 3 Kg. powerpack for the PGMP-12 (and the discovery that it is sufficient to energize the magnetic bottle of a C-bomb) allows anti-matter to be used in virtually all sizes of nuclear weapon. Further reductions in size are made possible with advances in technology.

The Michelson Thermostellar Device is the Imperium's Gigaton (1,000+ Mt.) "Planet cracker" series, which are usually indexed by the size of planet they are intended to destroy (for example, a Mark I is built to reduce a size 1 planet to asteroids, while a Mark VII so destroys a size 7, etc., all the way up to Mark X), and are transported by a robot starship which also serves as the bomb casing. The usual ship used is a converted Type S Scout/Courier, which retains its computer and drives, but has a Drone Brain added and all the staterooms and hold space stripped out for the housing of the weapon's powerplant/magnetic bottle. Tactically, MTDs are usually used to destroy uninhabited planets that have been turned into bases by enemy powers or (most often) to destroy critical gas giants during a retreat to inhibit an enemy fleet's ability at refuelling and pursuit.

The "collapsing" rounds of **Traveller**/*Striker* are the next step beyond anti-matter, in that they deliver almost as efficient a reaction without the need of a powerplant to maintain the magnetic bottle. This is especially valuable at the lowest yields that are most useful as tactical nuclear weapons. Further developments, however, in the miniaturization of powerplants (including the prospect of a true anti-matter fuel cycle plant) will probably supplant even the small collapsing rounds.

— *Jim Cumber*



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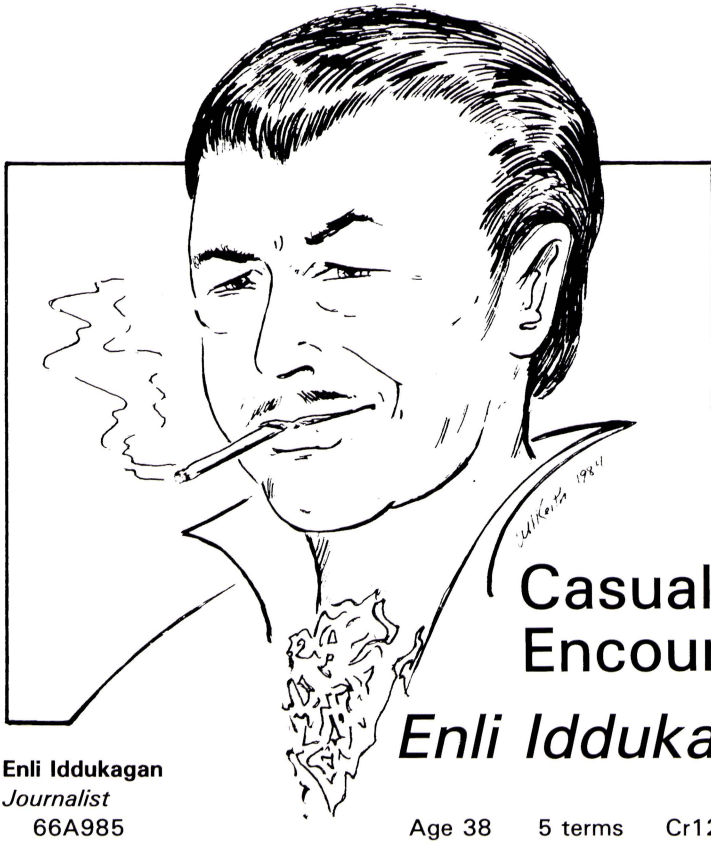


Casual Encounter: *Enli Iddukagan*

Enli Iddukagan
Journalist
66A985 Age 38 5 terms Cr125,000
Streetwise-2, Bribery-2, JoT-1, SMG-1 Travellers

Formerly a stringer for the *Traveller News Service* (and still possessing many contacts within that organization), Enli Iddukagan spun off as a free-lance investigative journalist just one year ago. He has travelled throughout the Spinward Marches in search of stories, preferably those potentially embarrassing to the Imperial government or any of several major megacorporations.

Iddukagan is currently on the trail of a story which, he hopes, will make his name known from one end of the Imperium to another. He believes he has uncovered evidence that certain admirals were diverting supplies from the war effort to line their pockets through black market sales. If true, this would point to corruption of the highest magnitude throughout the Spinward Marches front, and perhaps explain early difficulties faced by Imperial forces in the recent war.

Iddukagan has made charges of this nature to admiralty officials, hoping for a reaction that could be used effectively. A public-relations official for the Navy issued a firm denial, which the reporter was able to turn (through clever editing) into a prevaricating, suspicious attempt to cover up the issue.

In order for Iddukagan to make any further headway with the story, he needs proof of his allegations—and proof has not been easy to come by. His continuing efforts to find the proof he seeks are a large part of what makes him useful in a **Traveller** adventure or campaign.

Adventurers are most likely to come into contact with Iddukagan as he tries to ferret out Navy secrets for his story. Navy, Scout, or Marine characters might be approached by Iddukagan with an offer of large reward if they will tell him all about the scandalous behavior of the high command. Merchants might be asked if they have been involved in Navy convoys, or handled any of the diverted goods, again with the offer of large sums of money for a good story.

Since Iddukagan is lacking in objectivity, he can become a good source of income for anyone with a gift for spinning a plausible yarn. Average the character's intelligence with the journalist's; this is the roll or less required for Iddukagan to believe the character. Bargaining—via the reaction table—can establish a price, usually somewhere between Cr200 and Cr1200.

Iddukagan's potential for mischief doesn't stop with that, however. He may also hire adventurers, particularly adventurers with a merchant ship, to help him set up a scam to catch some high naval officer in an illicit deal.

In addition to being a possible patron, Iddukagan can turn up as the object of an adventuring band's activities. The reporter has accumulated a number of enemies over the years. Many Naval officers, the principals of several megacorporation regional offices have reason to hate the man, and could all seek more than mere embarrassment. In any event, the adventurers could find themselves hired to do something about Iddukagan—set him up, kill him, whatever.

Of course, it is possible to be caught in the middle when Iddukagan is set upon by some other group. Helping him could gain the reporter's deep gratitude

(and a ready handout), but one is often judged by the company he keeps, and Enli is not the best choice for a drinking companion.

A furtive, shifty man, Iddukagan has his uses; he might also serve as a contact, an old friend or acquaintance of one of the adventurers who could be a useful source of information. He has sources in the startown districts of just about every major port of the Spinward Main, and his skill at paying out gratuities for services rendered give him a lot of use in prying information out of strangers. Unfortunately, even in this role, Iddukagan exhibits drawbacks. He is entirely uncritical of his information and sources, with a marked tendency to accept as gospel the most tenuous of rumors (provided they feed his prejudices). He has a nose like a bloodhound when he thinks there is a big story in the offing and will horn into the adventurers' affairs if he thinks it will lead him to a big story.

While on Jewell shortly after the outbreak of the war, Iddukagan was assigned as a war correspondent to a brigade of Imperial ground troops. Caught behind Zho lines with a detached company, he was the only one to make it to Imperial lines. It has been whispered ever since that he sold out the unit for his own safety, and many army characters who run across him should be encouraged to believe this is true (and to nurse a large dislike for him).

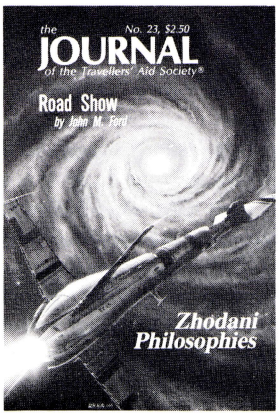
— *J. Andrew Keith*

Continued from page 15

the Denotam crew, which, once the discovery of the scam is uncovered, will want to silence the adventurers who are threatening the goose that lays the golden eggs.

This basic situation can generate several adventuring situations, all with a minimum of effort.

— *John Marshal*



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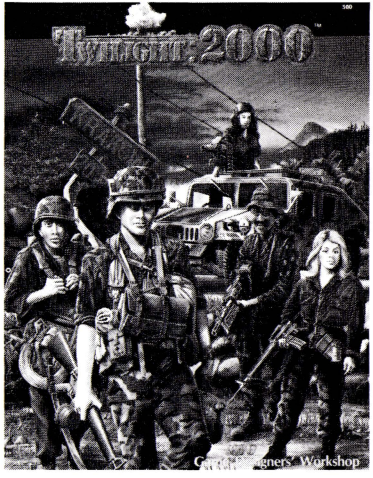

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